

U.S. Department of the Interior
Bureau of Land Management
White River Field Office
73544 Hwy 64
Meeker, CO 81641

ENVIRONMENTAL ASSESSMENT

NUMBER: CO-110-2006-048-EA

CASEFILE/PROJECT NUMBER:

- Applications for Permit to Drill wells 8608D and 8616B at location P09 497 - Lease C-65560
- Proposed Willow Creek Trunk Pipeline - COC70171
- Planned two wells at location L34 397 - Lease C-57972
- Planned two wells at location P04 497 - Lease C-57687
- Planned two wells at location D03 497 - Lease C-57687
- Planned two wells at location L33 497 - Lease C-57975
- Planned two wells at location O28 497 - Lease C-67779
- Planned two wells at location G29 497 - Lease C-67779
- Planned two wells at location B30 497 - Lease C-67780

PROJECT NAME: EnCana Eureka/Double Willow Exploration – Willow Creek Drainage

LEGAL DESCRIPTION: Sixth Principal Meridian, Colorado
T3S, R97W, Sec. 14, 22, 23, 27, 33-34
T4S, R97W, Sec. 3, 4, 9, 16, 19-21, 28-30, 33

APPLICANT: EnCana Oil & Gas (USA) Inc.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Proposed Action: On November 18, 2005 EnCana submitted Applications for Permit to Drill (APD) two natural gas wells in the Willow Creek drainage, the 8608D and 8616B wells at location P09 497 (SESE Sec. 9, T4S R97W). In addition, EnCana submitted an application for a natural gas pipeline right-of-way in the Willow Creek drainage (serialized as COC70171). The proposed 7.1 mile (37,397 feet) Willow Creek Trunk Pipeline would carry natural gas from several wells drilled on private land in the area and from the proposed 8608D P09 497 and 8616B P09 497 wells. This environmental assessment (EA) addresses the impacts of drilling those wells and constructing the trunk pipeline.

By agreement between EnCana and BLM, the other facilities planned by EnCana for the project area are included in the Proposed Action for this EA, although APDs have not yet been received

by BLM. Those other facilities include all natural gas wells, access roads and pipelines on public lands or to Federal minerals currently planned by EnCana Oil and Gas (USA) Inc. (EnCana) in the Willow Creek drainage. The Willow Creek drainage includes Willow Creek, East Willow Creek, West Willow Creek, and Bull Fork of Willow Creek. In addition to the two wells for which APDs have been submitted and the trunk pipeline, the additional facilities planned are seven well pads, each with two wells to be drilled from them. (See the Table below and Figures 1, 2 and 3.) Five of the eight total drill pad locations would be on federal surface and mineral estate; three would be on split estate. Included with the well pads are the necessary short access roads and road improvements required at the above locations and four additional gathering pipelines totaling 22,520 feet that link the proposed well locations with existing pipelines.

As APDs for the other locations are submitted, this EA will serve as the NEPA documentation for those APDs, modified to the extent that the proposals submitted vary from the descriptions in this EA. The need for additional permits (e.g., a Section 404 permit for the B30 497 location) would be determined on a case-by-case basis as APDs are submitted to BLM.

All of the proposed or planned well pad sites were included in EnCana's on-site visits for Group E (May 21, 2004), Group M (October 13, 2004), or Group P (November 3, 2004).

- Location P09 497 with two federal wells: APDs for two wells, 8608D P09 497 and 8616B P09 497 (T4S, R97W, SESE Sec. 9), were submitted to BLM on November 18, 2005. During the on-site and survey of this location, it was referred to as the DW-P070. Upon further examination in February and March 2005, BLM directed EnCana to redesign the well pad configuration to improve drainage past the well pad and to minimize erosion of the hillside on the south side of the pad. The redesigned pad has been included in this analysis.
- Other locations in the project area which are planned for future drilling:

Well Pad Site	On-Site ID	Location	Length (in feet)	
			Access	Pipeline
L34 397	E-P026	T3S, R97W, NWSW Sec. 34	100	100
D03 497	DW- P004	T4S, R97W, NWNW Sec. 3	200	200
P04 497	DW-P003	T4S, R97W, SESE Sec. 4	200	200
O28 497	DW-P077	T4S, R97W, SWSE Sec. 28	0	8,450
G29 497	DW-P078	T4S, R97W, SWNE Sec. 29	0	2,640
B30 497	DW-P079	T4S, R97W, NWNE Sec. 30	900	5,280
L33 497	DW-P054	T4S, R97W, NWSW Sec. 33	0	4,750

- Road construction: As part of the proposal for the P09 497 location, the road up East Willow Creek next to the well pad would be relocated. (See Figure 2.) Crossing a side drainage with a culvert would allow the road to be straightened at that point and the well pad would be located on the site of the existing road. New road construction and restoration of the existing roadway would disturb as much as 1,500 feet, of which 600 feet would be reclaimed immediately.

The road up West Willow Creek to well pad B30 497 would be reconstructed near the point where the new access road to the well pad would cross the creek channel. The rather steep grade at that point would be reduced and the excess material would be used to build a road surface across West Willow Creek to the site of the proposed well pad.

- **Pipelines:** The proposed trunk line along the Willow Creek road would have a total length of 37,397 feet (7.1 miles) and a diameter up to 16-inches. The disturbance width would be 60 feet from the tie-in with the TransColorado Pipeline in T3S, R97W, NENW Sec. 14, to roughly the location of well pad P04 497, and 30 feet from that point up East Willow Creek to the Bull Fork compressor station in T4S, R97W, SWSE Sec. 16. The pipeline would be located immediately adjacent to the road up Willow Creek and East Willow Creek on the east side for much of its length, crossing over to the west side where terrain dictates (ROW application serialized as COC70171). If the wells at the P09 497 location are successful, the gas produced at this location would be transported in a new pipeline north along East Willow Creek to the confluence with West Willow Creek and then west up West Willow to EnCana well BFU #4-2, where the pipeline would connect with an existing line. The portion of this line in East Willow Creek would be in the trunk pipeline right-of-way and would be the first part of that pipeline. The portion of the line up West Willow Creek would add 3,025 feet of disturbance to the project. The four well pads proposed in the upper Willow Creek drainages would each require construction of a new segment of pipeline adjacent to existing roads. Total disturbance would be 87 acres, of which about 22 would be on BLM surface.

Use of those portions of the road in Willow Creek and West Willow Creek that cross public lands administered by BLM is authorized under BLM right-of-way grant COC66509. Improvement and use of those portions of the road up East Willow Creek and the Bull Fork that cross public lands would be requested in the APDs for the wells at those locations where access would be required.

Surface Disturbance Related to Willow Creek Oil and Gas Facilities (Acres)								
	Well Pads		Roads		Pipelines		Total	
	Initial	Long-term	Initial	Long-term	Initial	Long-term	Initial	Long-term
Total	25.6	10.2	2.6	1.6	87.0	0.0	115.2	11.8
BLM	16.0	6.4	2.5	1.5	22.1	0.0	40.6	7.9

Total initial disturbance for all well pad locations and pipelines is estimated at 115.2 acres – 87 acres for the pipelines, 22.6 acres for well pads, and 2.6 acres for well pad access roads. Following successful reclamation of the disturbed areas, long-term disturbance is estimated at 12 acres. Total initial disturbance on BLM land is estimated at 40.6 acres.

No Action Alternative: None of the proposed wells, well pads, access roads, tie-in pipelines, or the trunk pipeline would be constructed.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR ANALYSIS:

The size and configuration of the well pad for the 8608D P09 497 and 8616B P09 497 wells, as originally proposed, provided inadequate drainage around the location. After BLM indicated that a change would be required, EnCana redesigned the pad, allowing sufficient room for

passage of water and including engineering features that would stabilize the drainage as it passes the well pad. This EA evaluates the impacts of the newly designed well pad at that location. Since EnCana has agreed to the redesign, there is no reason to further consider the impacts of the original proposal.

NEED FOR THE ACTION: All of the proposed or potential actions analyzed in this EA are being pursued by EnCana in order to exercise its federal mineral lease rights.

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP)

Date Approved: July 1, 1997

Decision Number/Page: Pages 2-5, "Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values."

Decision Language: The Proposed Action has been reviewed for conformance with this plan (43 CFR 1610.5, BLM 1617.3). The action conforms to the decisions/pages of the plan listed above.

Well pad P09 497 is within a lease containing the following stipulations:

- Controlled Surface Use stipulation for slopes in excess of 35 percent,
- No Surface Use stipulation to protect sensitive plants,
- Timing Limitation (April 15-July 7) for protection of sage grouse nesting habitat
- Endangered Species Act stipulation.

None of the conditions requiring implementation of the stipulations exist at the location of the well pad.

Well pad L33 497 is within Lease C-57975 that has a timing limitation protecting a sage grouse strutting ground buffer. The well pad is not within the stipulated area.

**AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES /
MITIGATION MEASURES:**

Standards for Public Land Health: In January 1997, the Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made

for each of them in an environmental analysis. These findings are located in specific elements listed below.

CRITICAL ELEMENTS

AIR QUALITY

Affected Environment: The project area is within a Class II Prevention of Significant Deterioration (PSD) air quality area. No Class I PSD areas are located within 40 miles of the project area.

The principal air quality parameter likely to be affected by construction of well pads, roads, and pipelines is the level of inhalable particulate matter, specifically particles ten microns or less in diameter (PM₁₀) associated with fugitive dust. Although no monitoring data are available for the survey area, it can be surmised that the air quality is good because the Colorado Air Pollution Control Division (APCD) estimates the maximum PM₁₀ levels (24-hour average) in rural portions of western Colorado like the Piceance Basin to be less than 50 micrograms per cubic meter (µg/m³). This estimate is well below the National Ambient Air Quality Standard (NAAQS) for PM₁₀ (24-hour average) of 150 µg/m³.

Environmental Consequences of the Proposed Action: The construction of the facilities proposed for the project area – well pads, pipelines, and access roads – would result in short-term, local impacts on air quality during and after construction, due to dust being blown into the air. However, airborne particulate matter would not exceed Colorado air quality standards on an hourly or daily basis. Following successful revegetation of the sites, airborne particulate matter should return to near pre-construction levels.

Environmental Consequences of the No Action Alternative: None.

Mitigation: Dust abatement measures should be implemented as described in the APD's 13 Point Surface Use Plan.

The operator will be responsible for complying with all local, state, and federal air quality regulations as well as providing documentation to the BLM that they have done so.

To minimize production of fugitive particulate matter (fugitive dust), vehicle speeds must not exceed 15 mph *or* dust plume must not be visible at appropriate designated speeds for road design. In addition, the application of a BLM approved dust suppressant (e.g. water or chemical stabilization methods) will be required during dry periods when dust plumes are visible at speeds less than or equal to 15 mph. Surfacing the roadway with gravels will also help mitigate production of fugitive particulate matter.

To reduce production of fugitive particulate matter originating from well pads and associated stockpiled soils (long term storage) interim reclamation will be required. Interim reclamation will consist of excess stockpiled soils associated with pad construction being pulled back over the portion of the well pad not being utilized for production facilities and access. Portions of the well pad undergoing interim reclamation will be returned to grade (as close as possible), promptly re-seeded, and biodegradable fabrics will be utilized on slopes exceeding 5% (e.g. fill slopes). If interim reclamation is not practical (e.g. completion of drilling operation will require

an extended period time (multiple well pads)), stockpiled topsoils will be covered with biodegradable fabrics such as (but not limited to) jute netting and seeded with a BLM approved seed mixture (see vegetation section of this document). Furthermore, soils stockpiled for short durations (e.g. during road/pipeline construction/maintenance) will be wetted during dry periods to reduce production of fugitive particulate matter.

CULTURAL RESOURCES

Affected Environment: Well Pads L34 497, P04 497, D03 497, P09 497, and associated access roads and pipelines, including the road re-route in East Willow Creek. The proposed well pads and associated access roads and pipelines were inventoried at the Class III (100 percent pedestrian) level between April 28 and May 14, 2004 (Conner and Davenport, 2004; Compliance Dated, May 27, 2004). No eligible cultural resources at these four locations were identified in the inventory.

Well pads L33 497, O28 497, G29 497, B30 497, and associated access roads and pipelines in Upper East Willow Creek, the Bull Fork of East Willow Creek and West Willow Creek. Most of the proposed facilities were inventoried at the Class III (100 percent pedestrian) level between May 5 and May 25, 2005 (Conner and Davenport, 2005; Compliance Dated, 6/06/2005). The pipeline route for the B30 497 location had been inventoried at the Class III level in 2003 (Metcalf, 2003; BLM reference, 03-54-30). No new cultural resources were identified by these inventories but the 2005 inventory reevaluated an historic ranch complex near the L33 497 location that has been officially evaluated as not eligible for inclusion in the National Register of Historic Places (NRHP).

Trunk Pipeline. The northern 6.5 miles of the proposed pipeline route were inventoried at the Class III (100 percent pedestrian) level on September 7 and 25, 2004 (Conner and Davenport, 2004; Compliance Dated, October 7, 2004). Two cultural resources had previously been recorded in the project area: 5RB3405, the Willow Creek wagon track; and 5RB4747, an historic barn and associated structures. One new site was recorded, 5RB4898, an historic ranch complex. All three sites lie within the 200-foot-wide corridor inspected for the proposed pipeline but all were field evaluated as not eligible for inclusion in the NRHP. Archaeological clearance was recommended. The remaining southern portion of the route was inventoried at the Class III (100 percent pedestrian) level on May 31 and June 8, 2004 (Connor and Davenport, 2004; Compliance Dated, June 22, 2004). No eligible cultural resources were identified in the inventory.

Spur Pipeline from East Willow Creek to West Willow Creek: The right-of-way from the trunk pipeline right-of-way in East Willow Creek to existing well pad BFU #4-2 was inventoried at the Class III (100 percent pedestrian) level on November 22, 2005 (Conner, 2005; Compliance Dated, 12/12/2005). No new cultural resources were identified by the inventory.

Environmental Consequences of the Proposed Action: Construction of the proposed well pads and associated access roads and tie-in pipelines, the minor road re-alignment, the spur pipeline to West Willow Creek, and the trunk pipeline adjacent to the Willow Creek and East Willow Creek road would not impact any known eligible cultural resources.

Environmental Consequences of the No Action Alternative: None

Mitigation: 1. The operator is responsible for informing all persons associated with the project operations that they would be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and contact the authorized officer (AO). Within five working days, the AO would inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming *in situ* preservation is not necessary); and
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes at any time to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will be allowed to resume construction.

2. Pursuant to 43 CFR 10.4(g), the holder of this authorization must notify the AO by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), the holder must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.

FLOOD PLAINS, WETLANDS, RIPARIAN ZONES, AND ALLUVIAL VALLEYS
(includes a finding on Standard 2)

Affected Environment: No flood plains, wetlands, or riparian zones would be encountered during construction of the eight well pads or their proposed pipeline routes. Well pad locations P04 497 and P09 497, including the reroute of the East Willow Creek road at location P09 497, are within at least ¼ mile of East Willow Creek, a perennial flowing stream. The proposed pipeline would parallel East Willow Creek within 30 to 60 feet of the creek. The main road up East Willow Creek is between the proposed pipeline route and the creek.

The riparian zone along public land segments of East Willow Creek was inventoried for proper functioning condition (PFC) in September, 1997. The public land segment of the stream is approximately 1.8 miles in length. The 1997 PFC inventory showed three segments of the stream totaling 0.7 miles in PFC. The trend for the PFC segments, though not rated by the inventory, was likely stable based upon the descriptions of conditions along those segments noted on the inventory write-ups. The remaining 1.1 miles contained four segments in a

Functioning-At-Risk (FAR) condition and none in a Non-Functional condition. The trend in improvement was apparent for two segments and not apparent for two.

Observations of the seven segments were made on July 7 and July 8, 2004 by a WestWater Engineering specialist. Two of the PFC segments (segments 1 and 5) are still properly functioning. The four FAR segments are still at risk. The lower segment (segment 7 in the SW¼SE¼ of section 4, T4S, R97W), properly functioning in 1997, is presently at risk due to noxious weed invasion and bank trampling by cattle. The trend in improvement for segments 1 through 6 was not apparent, meaning those segments appear stable under current flows. The drought for the past four or five years has probably resulted in flows that have not been favorable for improvement of riparian vegetation. Drought conditions have most likely contributed to the declining condition along segment 7. Lack of forage and water has concentrated livestock along this segment resulting in heavy grazing use of riparian vegetation and significant bank trampling.

The access road and pipeline route for well pad B30 497 would cross West Willow Creek and the well pad would be constructed within 50 feet of the creek. West Willow Creek at this location is a perennial flowing stream. The creek is deeply incised in a narrow, steep-sided channel. The riparian zone is very narrow due to constriction of the steep-sided channel, and vegetation consists of a healthy community of sedges and rushes that show very little sign of livestock use. This segment of the stream is in PFC.

Environmental Consequences of the Proposed Action: Construction of the facilities in East Willow Creek would not directly impact any riparian vegetation along the stream. Off-site impacts, mainly increased sediment production from construction of the proposed well pads and pipeline, could have negative impacts on the riparian vegetation that occurs along East Willow Creek, which is typically made up of shallower-rooted herbaceous species that lack the ability to effectively dissipate flow energy along the stream. Increased sediment production into the creek could generate increased scouring, which could decrease the herbaceous vegetative cover protecting the stream banks.

Construction of the proposed pipeline that parallels East Willow and of well pad P09 497, including the reroute of the main road, has the greatest potential for increased sediment production directly into the creek. Approximately 13 acres of surface disturbance could occur from construction of the pipeline in East Willow Creek. Much of this disturbance would be within 500 feet of the stream. Based upon the topography of the area and the proximity of the disturbance to the stream, any runoff occurring from the pipeline disturbance would likely discharge directly into the stream at the same points where runoff from the road reaches the stream. Increased flows and increased sediment loads at these points would likely result in heavy scouring (nick points) which could initiate a degradation cycle both up and down stream from these points.

These increased flows are expected to occur for only a year or two until the pipeline is sufficiently revegetated. The riparian vegetation along the stream may be resilient enough to withstand the increased short-term flows. Implementation of best management practices to decrease and retain sediment loads on-site would aid in protecting herbaceous vegetation from the effect of scouring. With implementation of such practices and the expected short-term

impact of the disturbance, changes in the current functioning condition of the stream are not expected to occur.

Likewise, the reroute of the main road at well pad location P09 497 could change flow patterns into East Willow Creek. The reroute would place the road closer to the stream, requiring placement of a culvert into a deep gully that the new route would cross. Once in place, the culvert would increase the velocity of any flows from the side-drainage and concentrate those flows at the discharge point of the culvert.

If improperly installed, the increased velocity and concentration of any flows from the culvert would likely result in increased erosion and bank instability of the gully just before entering the creek. This action could result in a nick point on the creek that could initiate a degradation cycle both up and down stream from this point. Without mitigation, this impact would be long-term and could likely result in a decline in the current functioning condition to the point that the impacted segments of East Willow Creek could become non-functional. Proper placement of structures designed to dissipate the velocity and energy of flows leaving the culvert would likely maintain the current nature of flows transported from this gully into the creek. As a result, changes in functioning conditions on East Willow Creek would not likely occur from the reroute.

With mitigation, the actions proposed with development of the well pads and pipeline in East Willow Creek are not expected to change the current conditions along the stream. The current PFC of two public land segments of East Willow Creek would not change and would continue to achieve the required health standards for riparian systems.

The other five segments of the stream that are FAR are likely not achieving the required health standards. With mitigation, the actions proposed are not expected to detract from the ability of these segments to achieve the required standards at some future time.

The access road and pipeline route for well pad B30 497 would cross West Willow Creek at a location downstream from the well pad. The crossing would be located just above a fenced livestock watergap. The approaches to the crossing and the crossing itself are perpendicular to the channel, which is well defined, unobstructed, and straight. If properly constructed to BLM specifications, the crossing would have minimal impact on the functioning of the stream. If improperly constructed, the crossing could initiate a headcutting process in the channel, which would negatively impact downstream vegetation from increased sedimentation. Removal of the crossing upon abandonment of the location could result in a long-term negative impact from any headcut advancement upstream. Headcut advancement would create an unstable channel and result in loss of riparian vegetation and the eventual non-functioning condition of the stream.

Environmental Consequences of the No Action Alternative: None.

Mitigation: See recommended mitigation for Water Quality regarding a Stormwater Management Plan, standard RMP COAs and engineered design of structures placed in and near well pads P09 497 and B30 497.

Finding on the Public Land Health Standard for riparian systems: Two of seven stream segments in East Willow Creek and the stream segment of West Willow Creek at well pad location B30 497 are in Proper Functioning Condition and meet the standards for riparian systems. With successful reclamation, the proposed and potential actions in the project area would not change this status. The other five segments of East Willow Creek stream are Functioning-At-Risk and are likely not achieving the required land health standards. With successful reclamation, the actions proposed are not expected to detract from the ability of these segments to achieve the required standards in the future.

INVASIVE, NON-NATIVE SPECIES

Affected Environment: Well pads P04 497, D03 497, P09 497, L34 397, and the East Willow Creek road reroute were inventoried for the presence of any noxious or invasive weeds on May 22, 2004. The proposed trunk pipeline route along the road up Willow Creek and East Willow Creek to the Bull Fork compressor was inventoried on July 7 and 8, 2004. Well pad L33 497 and the pipeline route down East Willow Creek to the Bull Fork compressor were inventoried on October 13, 2004. Well pads O28 497, G29 497, and B30 497, as well as their pipeline routes adjacent to existing access roads, were inventoried November 3, 2004. Approximately 25 acres, 600 feet around the center stake at each well pad, were inventoried including the access routes from the existing road. The reroute of the East Willow Creek road at pad location P09 497 was included in the inventory of that well pad. An area 100 feet along the east side of the road, approximately 63 acres, was inventoried for the proposed trunk pipeline up Willow Creek and East Willow Creek to the Bull Fork compressor.

With the exception of well pad G29 497 in the Bull Fork drainage, no noxious weeds were observed within the areas inventoried for the other seven well pads. A yellow toadflax infestation at well pad G29 497 has been established for many years and has resisted treatment. A few isolated houndstongue plants were observed along the main Willow Creek road, but no large infestations were found. A few musk thistle plants were observed near the East Willow Creek stream channel in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 4, T4S, R97W. Several isolated occurrences of houndstongue were observed along the roads in the West Willow Creek drainage.

Environmental Consequences of the Proposed Action: The disturbance associated with the proposal could create suitable conditions for establishment of noxious weed species observed in the project area. The seed banks of the noxious weed species observed in the Willow Creek and East Willow Creek drainages are probably relatively low. The seed bank of cheatgrass in the basin big sagebrush vegetation types in lower Willow Creek is relatively high, which would create problems for successful reclamation of any disturbances.

The seed bank for houndstongue in the West Willow Creek drainage is more than enough to take advantage of any disturbance that would occur on the alluvial soils present. Any establishment occurring is expected to be small initially; however, if allowed to continue for several growing seasons, seed production would be greatly increased.

The seed bank for yellow toadflax at well pad G29 497 is probably very large as the infestation has been there for many years. Any disturbance at this location would undoubtedly be subject to

establishment of yellow toadflax. Also, seed transport from this location to other areas would be most likely, especially on earth moving equipment and equipment transports.

Establishment of noxious or invasive weeds would create problems through seed production in proportion to the number of plants and the duration of their production. Germination of any increased seed production of noxious or invasive plants could aggressively compete with or exclude desired vegetation during reclamation. Establishment of noxious species on the disturbances created by the Proposed Action could result in the spread of these unwanted plants into the adjacent undisturbed plant communities.

The noxious species encountered within the project area have distribution mechanisms that can transport seed considerable distances from the parent plants; therefore, such seed that establishes on any disturbed areas could be transported to remote areas of the Willow Creek watershed, potentially impacting healthy plant communities in a negative way.

Environmental Consequences of the No Action Alternative: None

Mitigation: Any noxious or invasive plants will be eliminated before any seed production could occur. Eradication should make use of materials and methods approved in advance by the AO.

The operator will clean all earth-moving equipment and transports and any off-road equipment to remove seed and soil prior to commencing operations on public lands within the project area. In addition, all earth-moving equipment used in construction of well pad G29 497, as well as transport equipment, will be cleaned prior to leaving the immediate area of the well pad. The operator will be required to monitor disturbed areas for establishment of any noxious weed species. Monitoring should continue until successful reclamation efforts have been achieved. The operator will be required to attain sufficient vegetative cover from reclamation species within three growing seasons, comparable to that of nearby undisturbed plant communities. Other mitigation is included in the Vegetation section.

MIGRATORY BIRDS

Affected Environment: The sagebrush, pinyon/juniper, aspen, and mountain shrub communities found within the project area support a large array of migratory birds that nest during the months of May, June, and July. Bird populations associated with these communities that have a high conservation interest (Rocky Mountain Bird Observatory, Partners in Flight program) are listed in the following table. No specialized or narrowly endemic species are known to occupy the project area.

Birds of High Conservation Priority by Habitat Association

Sagebrush	Pinyon/juniper	Aspen	Mountain shrub
Brewer's sparrow, Green-tailed towhee	Pinyon jay, black-throated gray warbler, Juniper titmouse, gray flycatcher, gray vireo, violet-green swallow	Broad-tailed hummingbird, red-naped sapsucker, purple martin, Cordilleran flycatcher, Macgillivray's warbler	Blue grouse, Common poorwill

Well sites and their associated access roads, along with the pipeline gathering system, would all be located in the bottoms of Willow, Bull Fork, West Willow, and East Willow Creeks. The upper portions of East Willow, Bull Fork, and West Willow are mountain sagebrush in the bottoms and mostly mountain shrub habitat on the slopes. Small groves of aspen frequently occur on the north slopes of side draws to the main drainage ways. At lower elevations, main Willow Creek is a basin big sagebrush habitat that has seen considerable alteration. Sagebrush has been converted to dry and irrigated hay and pastureland. Side slopes and adjacent ridgelines to main Willow Creek are mostly pinyon/juniper woodland. East Willow Creek remains basin big sagebrush with a small perennial stream located in a deeply incised gully. One small lake and a spring-fed pond provide aquatic and waterfowl habitat on main Willow Creek.

Environmental Consequences of the Proposed Action: Construction of well pads and their associated access roads, the road relocation at P09 497 in East Willow Creek, and construction of the pipelines in and adjacent to the main roads up Willow, West Willow, Bull Fork, and East Willow Creek canyons would occur within basin big sagebrush, mountain sagebrush, mountain shrub, and grass/forb habitats. Initially, approximately 115 acres of habitat would be removed during well pad, road, and pipeline construction. In the long term, approximately 12 acres would likely remain disturbed. Although numerous aspen stands occur within ¼ mile of road and pipeline corridors and four of the well pad locations, no aspen habitat would be removed. Construction during the migratory bird-nesting season (May through July) would be disruptive and nests could be lost. Recent studies suggest that nesting density tends to be reduced by up to 50 percent in close proximity (within 300 feet) of roads. Typically, one pair of high-interest bird species occurs per hectare. No physical disturbance or loss of pinyon/juniper habitat would occur, although scattered pinyon or juniper trees within the transition zone between basin big sagebrush in the valley bottoms and pinyon/juniper hillsides may be removed. All habitats discussed may be subject to human disturbance associated with natural gas development, but additional disturbance in the lower (northern) portion of the project area would occur in the Willow Creek corridor, which is currently being heavily utilized. Although the Proposed Actions would produce an incremental and longer-term reduction in basin big sagebrush, mountain sagebrush, and mountain shrub habitat, implementation of the Proposed Actions would have no measurable influence on the abundance or distribution of breeding migratory birds at any landscape scale.

The development of reserve pits in the project area may be expected to attract waterfowl and other migratory birds for purposes of resting, foraging, or as a source of free water. It has recently been brought to the White River Field Office's attention that migratory waterfowl (i.e., teal and gadwall) have contacted oil-based drilling fluids stored in reserve pits during or after completion operations and are suffering mortality in violation of the Migratory Bird Treaty Act. The extent and nature of the problem is not well defined, but is being actively investigated by the federal agencies and the companies. Until the vectors of mortality are better understood, management measures must be conservative and relegated to preventing bird contact with produced water and drilling and completion fluids which may pose a problem (e.g., acute or chronic toxicity, compromised insulation).

Environmental Consequences of the No Action Alternative: None

Mitigation: The operator shall prevent use by migratory birds of reserve pits that store or are expected to store fluids which may pose a risk to such birds (e.g., migratory waterfowl, shorebirds, wading birds and raptors) during completion and after completion activities have ceased. Methods may include netting, the use of bird-balls, or other alternative methods that effectively prevent bird use and that meet BLM approval. It will be the responsibility of the operator to notify the BLM of the method that will be used to prevent bird use two weeks prior to beginning completion activities. The BLM-approved method will be applied within 24 hours after completion activities have begun. All lethal and non-lethal events that involve migratory birds will be reported to the Petroleum Engineering Technician immediately.

THREATENED, ENDANGERED, AND SENSITIVE ANIMAL SPECIES (includes a finding on Standard 4)

Affected Environment: The area of the Proposed Action includes no federally listed animal species and no habitat for such species. The special status species of concern in the project area include two Colorado BLM Sensitive Species: greater sage grouse and northern goshawk.

The upper seven miles (southern end) of the project area, including all of the well pad locations, is within or close to the designated overall range for sage grouse. The northern three miles of the pipeline corridor are outside the overall range for sage grouse and activities within this area would not affect sage grouse. The four well pads (L34 397, D03 497, P04 497, and P09 497) and the trunk pipeline located in the bottom of main Willow Creek and the lower portion of East Willow are in stands of tall, dense basin big sagebrush, which is not considered suitable sage grouse habitat. Studies of the Roan Plateau population of sage grouse have shown that they utilize the ridge tops and moderate sagebrush slopes; little or no use occurs in the valley bottoms where basin big sagebrush dominates.

The remaining four well sites, located in the upper portions of East Willow Creek, West Willow Creek, and the Bull Fork of Willow Creek, are in mountain sagebrush habitat. Although located in the drainage bottoms rather than the sage grouse-favored ridge tops, three of the sites have the added benefit of season-long water. Well site L33 497 in the upper portion of East Willow Creek is particularly attractive, as it is an open dry meadow with a shallow stream channel. The Willow sage grouse lek is located on the ridge east of East Willow Creek; a second lek is located on the ridge west of well site B30 497 in West Willow Creek. Observations of sage grouse traveling off the steep side slopes have occasionally been made in adjacent drainages and telemetry studies have located a very small number of tagged birds near the upper end of drainage bottoms. Although no evidence of sage grouse activity was noted at any of these well sites during field visits in September 2004 and early November 2004 for the remaining sites, the possibility of sage grouse use cannot be discounted. Sage grouse use of these areas would likely occur during the summer and early fall when adults and broods are seeking water and green forbs, rather than for nesting, which is more likely to take place in large expanses of sagebrush located on the flatter ridge tops.

Goshawks are known to utilize aspen stands for nesting, particularly when a significant amount of Douglas-fir or spruce/fir is a part of the stand. Generally, nesting would occur in bigger stands of larger trees at higher elevations (above 7,100 feet) that contain significant amounts of interior forest habitat. The aspen stands occurring in the vicinity of the four well sites located in the upper portions of the Willow Creek drainage are small in extent with smaller trees, and lack a conifer component. The potential for goshawk nesting is extremely limited. Combining a survey for goshawks with surveys recommended for other raptor species discussed in the Terrestrial Wildlife section would provide an added level of certainty that no impacts would occur as a result of disturbance during the nesting season.

Environmental Consequences of the Proposed Action: The removal of approximately 35 acres of mountain sagebrush habitat and four acres of dry meadow habitat, along with the associated disturbance to adjacent areas, has a potential to adversely impact sage grouse and their habitat. Besides the removal of suitable habitat, pad construction and drilling during the summer months would discourage, if not prevent, sage grouse and their broods from utilizing water and green forage in the drainage bottoms. Within the overall range for sage grouse in this area, the major drainage bottoms are often not considered suitable sage grouse habitat. However, in this case the four well sites and access routes in the upper portions of Willow Creek are considered suitable habitat for the following reasons: the habitat is mountain sagebrush and dry meadow, water is present throughout the summer and fall months, leks are located on adjacent ridge tops, and observations and telemetry have documented occasional sage grouse use in the upper portions of adjacent drainage bottoms.

Environmental Consequences of the No Action Alternative: None.

Mitigation: Revegetation of the four well sites and pipelines located in the upper portions of the Willow Creek drainage should encourage mountain sagebrush where it currently occurs and grass/forbs at well site L33 497. A very small amount of mountain sagebrush seed (1/4 lb./acre) is recommended in place of fourwing saltbush in the reclamation seed mix. Mountain sagebrush seed should be collected in the vicinity and applied separately by broadcasting in the fall or on snow during the winter.

Sage grouse use of mountain sagebrush valley bottoms should be further evaluated, particularly where summer water is available, open grass/forb habitat is present, and open sagebrush corridors are available (even if steep) into the drainage bottoms from the adjacent ridge tops. In this case, a better understanding of the value of valley bottoms to sage grouse may be more important than restricting disturbance during the breeding season, as such habitat is likely to have a very low potential for nesting.

Goshawk should be included in the raptor nest surveys identified in the Terrestrial Wildlife section that are to be completed prior to any development activity during the raptor nesting season (April 1 to August 15).

Finding on the Public Land Health Standard for Threatened & Endangered species: The area currently meets the standard for northern goshawk. No suitable nesting habitat would be removed by the Proposed Action and surveys would ensure that any potential nesting is not

disrupted. The standard with regard to the goshawk would be met. The project is within the overall range for sage grouse and suitable sage grouse habitat would be removed by well pad, road, and pipeline construction; however, much of the habitat removed would be mitigated over time by the reclamation identified above. Throughout the Eureka/Double Willow project area, the standard with regard to the greater sage grouse is expected to be satisfied by mitigation for grouse or grouse habitat to be developed by BLM and the Colorado Division of Wildlife. Greater sage grouse mitigation developed for these units would be in addition to mitigation developed for other oil and gas development areas within the Piceance Basin.

THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES (includes a finding on Standard 4)

Affected Environment: A survey for special status plant species was conducted on May 22, 2004 for well pads P04 497, D03 497, P09 497, and L34 397 and the East Willow Creek road reroute at pad location P09 497. The proposed trunk pipeline along the road up Willow and East Willow Creeks was inventoried on July 7 and 8, 2004. Well pad L33 497 and the pipeline route down East Willow Creek to the Bull Fork compressor were inventoried on October 13, 2004. Well pads O28 497, G29 497, and B30 497, as well as their pipeline routes adjacent to existing access roads, were inventoried on November 3, 2004.

Approximately 25 acres, 600 feet around the center stake at each well pad, were inventoried including the access routes from the existing road. The reroute of the East Willow Creek road at pad location P09 497 was included in the inventory of that well pad. An area 100 feet along the east side of the main road up Willow Creek and East Willow Creek, approximately 63 acres, was inventoried for the proposed trunk pipeline to the Bull Fork compressor. An area of 50 feet on either side of the East Willow Creek road from well pad L33 497 to O28 497, then on to the Bull Fork Compressor and on either side of the road from G29 497 to an existing pipeline in lower Bull Fork (at well BFU #20-2) was inventoried for the pipeline route for those well pads. The short pipeline route for well pad B30 497 was included in the inventory of the well pad. At the elevations encountered within the project area, the following special status species (SSS) plants could possibly occur:

- *Lesquerella congesta* (Dudley Bluffs bladderpod), a federally listed threatened species
- *Physaria obcordata* (Piceance twinpod), a federally listed threatened species
- *Penstemon debilis* (Parachute penstemon), a federal candidate
- *Gentianella tortuosa* (Utah gentian), a BLM sensitive species
- *Lesquerella parviflora* (Piceance bladderpod), a BLM sensitive species

The SSS plants expected within the project area all depend upon relatively barren shale exposures of the Green River Formation. The surface formations in the project area are a mix of the Uinta and the Green River with the Uinta at lower elevations.

The eight well pad locations inventoried are all on alluvial deposited soils with no Green River Formation shales exposed. Inventories for well pads P04 497, D03 497, P09 497, and L34 397 and associated pipeline routes were conducted during the appropriate period for identification of the SSS plants expected. No SSS plants or their suitable habitats were observed within the areas inventoried for these four well pad locations.

Inventories for well pads L33 497, O28 497, G29 497, and B30 497 and associated pipeline routes were conducted during a period of the season when the SSS plants expected may not have been detected, if present. However, the very specific habitat requirements for the SSS plants expected, exposed Green River shale barrens, would have been detected at the time of the inventory. These four well pads and their pipeline routes all occur on valley bottom-deposited alluvial soils. No exposed shale barrens are present at or near these locations. Without any suitable habitat present, no SSS plants are likely to occur within the areas inventoried for these well pads and pipelines.

Three barren shale slopes appearing similar to Green River shale barrens were encountered along the proposed trunk pipeline route to the Bull Fork compressor: two in the SW $\frac{1}{4}$ of section 9 and one in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ of section 16, T4S, R97W. All three shale slopes were inventoried 200 feet above the road (to the east). No SSS plants were found. The three shale slopes have a uniform cover of native grasses and forbs that is greater than that found on known habitats of the three SSS plant species likely to be present. The current vegetative cover on these slopes probably limits the suitability of these sites for habitat for the SSS plant species due to competition from the native species occupying the sites.

Environmental Consequences of the Proposed Action: No impact on any SSS plant species is likely from actions proposed. No SSS plants were observed during inventories of the proposed facilities. With the exception of the three Green River shale exposures along the pipeline, no potential habitat for any SSS plant exists within areas affected by the Proposed Action.

The three shale exposures encountered along the pipeline are, at most, marginal habitat. The disturbance of these sites from construction, as well as the reclamation to follow, is not expected to affect the suitability of these shale exposures as potential habitat.

Environmental Consequences of the No Action Alternative: None

Mitigation: None.

Finding on the Public Land Health Standard for Threatened & Endangered species (partial): The standard with regard to the five sensitive, threatened, or endangered plant species potentially located in the project area does not apply since no individual plants and no suitable habitat for the plants were identified during the SSS inventory.

WASTES, HAZARDOUS OR SOLID

Affected Environment: There are no known hazardous or other solid wastes on the subject lands. No hazardous materials are known to have been used, stored, or disposed of at sites included in the project area.

Environmental Consequences of the Proposed Action: No listed or extremely hazardous materials in excess of threshold quantities are proposed for use in this project. While

commercial preparations of fuels and lubricants proposed for use may contain some hazardous constituents, they would be stored, used, and transported in a manner consistent with applicable laws, and the generation of hazardous wastes would not be anticipated. Solid wastes would be properly disposed of.

Environmental Consequences of the No Action Alternative: None.

Mitigation: The operator would be required to collect and properly dispose of any solid wastes generated by the Proposed Action.

WATER QUALITY, SURFACE AND GROUND (includes a finding on Standard 5)

Affected Environment: Surface Water: Well pads L34 397, P09 397, P04 397, D03 497, L33 497, O28 497, G29 497, and B30 497, the Willow Creek pipeline, and all associated access roads and gathering pipelines are located along or nearby the existing road alignments that follow Willow Creek and its tributaries. Project features lie within the Willow Creek drainage, which is tributary to perennial Piceance Creek, a tributary of the White River, which ultimately flows into the Colorado River. Water quality standards and guidance for drainages within the Lower Colorado River Basin are included in the CDPHE WQCC Regulation No. 37 (2004a).

Willow Creek is listed as the mainstem of Willow Creek from the source to its confluence with Piceance Creek and is included in Segment 17 of the White River. Segment 17 has use designations of aquatic life cold 2, recreation 2, and agriculture, with a use-protected aquatic designation. Recreation Class 2 designation is for streams where primary contact recreation does not exist and cannot be reasonably expected to exist in the future, regardless of water quality. Willow Creek is perennial stream which has been identified in the White River Resource Area RMP/ROD as being suitable for in-stream flow surveys.

The “Status of Water Quality in Colorado – 2004” plus the 2006 update (CDPHE, 2006a) was reviewed for information related to the project area drainages. White River Segment 17 (which includes Willow Creek) was noted to have fully supporting aquatic life cold 2, fully supporting recreation 2, and fully supporting agriculture designated uses. White River Segment 17 has a Colorado integrated reporting category of 1, which is described as “fully supporting for all uses, all uses have been assessed and all uses are fully supporting the designated uses.”

Newly promulgated Colorado Regulations Nos. 93 and 94 (CDPHE, 2006b and 2006d, respectively) were reviewed for information related to the project area drainages. Regulation No. 93 includes the State’s list of water-quality-limited segments requiring Total Maximum Daily Loads (TMDLs). The 2006 list of segments needing development of TMDLs includes two segments within the White River - segment 9b, White River tributaries North & South Forks to Piceance Creek, specifically the Flag Creek portion (for impairment from selenium with a low priority for TMDL development) and segment 22, tributaries to the White River, Douglas Creek to the Colorado/Utah border, specifically West Evacuation Wash, and Douglas Creek (sediment impairments). Regulation 94 is the State’s list of water bodies identified for monitoring and evaluation, to assess water quality and determine if a need for TMDLs exists. The list includes

two White River segments that are potentially impaired – 9 and 22. Segment 17 (Willow Creek) is not listed.

A United States Geological Survey (USGS) stream gaging station is located on Willow Creek above the confluence with Piceance Creek. This gaging station was operated continuously from 1974 to 1985 and intermittently from 1987 to 1998 (USGS, 2004). A variety of field measurements and analytical laboratory data are available for this site. Several of the field measurements, including temperature, flow, specific conductance, and pH, have been selected to characterize Willow Creek and are described in the table below. Water quality information is available at various times of the year; spring and fall data have been selected to show seasonal variations.

Summary of Flow Information at Willow Creek Gaging Station

09306058

	Spring Conditions				Fall Conditions			
	Temp (°C)	Flow (cfs)	SpC (µS/cm)	pH (s.u.)	Temp (°C)	Flow (cfs)	SpC (µS/cm)	pH (s.u.)
Average	10	2.8	1298	8.4	12.2	2.3	1348	8.3
Minimum	3	0.05	1170	7.9	5.3	0.17	1210	7.9
Maximum	15	5.7	1590	9.7	23	6.8	1470	8.5

Notes: Spring conditions include 24 measurements, typically from April. Fall conditions include 22 measurements, typically from September. Data from USGS gaging station 09306058 (USGS, 2004).

Abbreviations: Temp – temperature, °C – degrees Celsius, SpC – specific conductance, µS/cm – microsiemens per centimeter, and s.u. – standard units.

Ground Water: The project area is located within the Piceance Basin whose primary ground-water resource is the alluvium of the Colorado River and major tributaries (Topper et al., 2003). Saturated Tertiary rocks in the basin are comprised of two primary units: the Upper and Lower Piceance Basin aquifers, which are separated by the Mahogany confining unit. Information presented in Topper et al. (2003) indicates the following approximate depths to potentiometric surfaces within hydrogeologic units: upper Piceance Basin aquifer 600 feet, lower Piceance Basin aquifer 700 feet, and Mesaverde aquifer 400 feet (based on a surface elevation of 7,400 feet). Water well data from the Colorado Division of Water Resources (Topper et al., 2003) indicate that in central Rio Blanco County, water wells are not common in the Basin. Approximately half have a total depth less than 300 feet and approximately half greater than 300 feet. Dissolved solids concentration in the project area within both the Upper and Lower Piceance Basin aquifers is approximately 1,000 milligrams per liter. Primary hydrogeologic units within the Piceance Basin are listed in the following table.

Summary of Hydrogeologic Units

Hydrogeologic Unit	Thickness (feet)	Approx Avg. Depth (feet)	Conductivity (feet/day)	Yield (gpm)	Transmissivity (sq. feet/day)
Upper Piceance Basin aquifer	0-1,400	700	<0.2 to >1.6	1-900	610-770
Lower Piceance Basin aquifer	0-1,870	2,800	<0.1 to >1.2	1-1,000	260-380
Mesaverde aquifer	Averages 3,000	7,700	Not listed	Not listed	Not listed

gpm – gallons per minute

Source: Topper, et al. (2003).

The Ebler groundwater well is located approximately 1.3 miles west of the planned P04 397 well pad. With a depth of 1,083 feet, the well produces groundwater from the Green River Uinta Formation, which is conveyed down a six-mile waterline for livestock watering. It is cemented and cased off from the surface to 885 feet, with 3/8-inch gravel pack from 885 feet to 1,083 feet. The well showed a sustained yield of 11.66 gallons per minute.

Environmental Consequences of the Proposed Action: Surface Water. The primary potential water quality impact would be from additional sediment generated by construction of the proposed access roads, drill pads, trunk pipeline, and gathering pipelines. Depleting the vegetation cover needed to protect watersheds from precipitation and runoff could increase both short-term erosion and sedimentation delivery to the White River watershed. Runoff-producing storm events could increase sediment loads in ephemeral channels. Depending on the soils affected, salt content in the sediment could also degrade water quality. The magnitude of these impacts is dependent on the amount of surface disturbance and the climatic conditions during the time the soils are exposed to the elements. The proximity of the pipeline alignment to Willow Creek in certain areas could possibly result in direct discharge of soil to Willow Creek or discharge of sediment laden runoff water to Willow Creek. With proper installation, monitoring, and maintenance of storm water BMPs and physical barriers where needed, impact on water quality in Willow Creek should be limited.

Construction of the P09 497 well pad would result in disturbance of an un-named tributary of East Willow Creek. The pad location would be on top of a drainage that has both partly overland (no defined channel) and partly channelized flow. The pad construction and reroute of the East Willow Creek road would also result in placement of fill within a gullied drainage reach on the west side of East Willow Creek road. With proper construction and maintenance, surface water drainage within the temporary diversion should not result in any additional erosion. Construction of the pad would allow for repair of the gullied section and with proper construction should stop or reduce the rate of gully formation in the drainage.

EnCana applied for a Section 404 permit for the proposed P09 497 well pad and associated road crossing (culvert) of an un-named tributary of East Willow Creek. Based on the revised plan (see Alternatives Considered but not Carried Forward for Analysis) for the P09 497 well pad, the Army Corps will issue a Nationwide permit for these proposed activities.

Ground Water: No impact on groundwater resources is anticipated. Shallow aquifers are protected from hydrofracturing and the production of oil and gas by installation and cementing of surface and intermediate casing. The objectives of surface and intermediate casing are specifically to case off and isolate shallow aquifers. Hydrofracturing used to stimulate natural gas production of the Mesaverde Formation is anticipated to extend a maximum of 500 feet horizontally from each well bore and not vertically. Any groundwater produced from the Mesaverde Formation would be hauled off and disposed of because of its poor water quality and would therefore be prevented from adversely impacting surface water.

Environmental Consequences of the No Action Alternative: None.

Mitigation: The operator will be responsible for complying with all local, state, and federal water quality regulations (such as but not limited to Phase I Storm Water Permit, Section 404 permits, and Industrial Wastewater/Produced Water Permits). The operator will also be required to provide the BLM with documentation that all required permits were obtained. The White River Record of Decision and Approved Resource Management Plan (July, 1997) includes a list of standard Conditions of Approval to be applied to All Surface Disturbing Activities (COAs 1-12) and to Road Construction and Maintenance (COAs 13-62). The applicant is required to be familiar with those standard COAs and to implement them as on-site conditions warrant. No operations using chemical processes or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies as outlined in Appendix B of the White River Resource Area RMP/ROD.

All surface disturbing activities will strictly adhere to “Gold Book,” fourth edition, surface operating standards for oil and gas exploration and development. Copies of the Gold Book can be obtained at the WRFO.

The proposed crossing of the unnamed tributary of East Willow Creek at the road realignment west of well pad P09 497 will be designed and constructed in accordance with BLM Manual 9112. The design, review, and evaluation will be accomplished under the direct supervision of a registered professional engineer. The crossing will be designed to minimize impacts on water quality and provide streambed stabilization downstream of the crossing. Due to the proximity of the junction with East Willow Creek downstream of the crossing, the road crossing design will provide for soil stability of East Willow Creek at the junction. The culvert will be installed with a skew so that outflow meets East Willow Creek at an angle of approximately 45 degrees, rather than the current right angle stream junction. The road reroute will be done in accordance with the Section 404 permit issued by the Corps of Engineers for the proposed P09 497 well pad and associated road crossing (culvert) of an un-named tributary of East Willow Creek.

The road crossing of West Willow Creek to access the B30 497 well pad will be designed and constructed in accordance with BLM Manual 9112. The design, review, and evaluation will be accomplished under the direct supervision of a registered professional engineer. The crossing will be designed to ensure fish passage, minimize impacts on water quality, and provide streambed stabilization downstream of the crossing. An Army Corps Nationwide permit will likely be required for the B09 access road crossing of West Willow Creek. The need for pad alteration and additional permitting would be determined when an APD is submitted for this location.

The road along East Willow Creek between its junction with West Willow Creek and its junction with the Bull Fork of Willow Creek will require frequent drainage relief after construction of the trunk pipeline. Where sufficient room is not available for sediment ponds or sediment sumps, additional drainage relief in the form of water bars or culverts will move drain water into East Willow Creek. To avoid further erosion and sediment deposition into the creek, appropriate erosion controls on the outlet side, e.g. jute mats or armoring with rock, will be installed.

Finding on the Public Land Health Standard for water quality: Water quality in the stream segments within the project area meets the criteria established in the standard. With

successful reclamation, the proposed and potential actions in the project area would not change this status.

CRITICAL ELEMENTS NOT PRESENT OR NOT AFFECTED:

No prime and unique farmlands, wild and scenic rivers, Areas of Critical Environmental Concern, or wilderness exist within the project area. No Native American religious or environmental justice concerns are associated with the Proposed Action.

NON-CRITICAL ELEMENTS

The following elements **must** be addressed due to the involvement of Standards for Public Land Health:

SOILS (includes a finding on Standard 1)

Affected Environment: The soil types in the project area occur from 6,000 to 8,900 feet in elevation. The average annual precipitation in the project area is 14 to 22 inches, the average annual temperature is 37 to 45 degrees F, and the average frost-free period is approximately 80 to 105 days. The proposed pad construction, road realignment, and pipeline construction activities would occur within 13 soil units inventoried by the Natural Resources Conservation Service (NRCS). Soil units, names, and characteristics are listed in the following table:

Summary of Project Area Soil Units

Soil Map Unit	Soil Unit Name	Slope (%)	Ecological Site	Effective Rooting Depth (in.)	Runoff	Erosion Potential	Bedrock Depth (in.)
6 ^A	Barcus channery loamy sand	2-8	Foothills swale	≥ 60	Slow	Moderate	≥ 60
15 ^A	Castner channery loam	5-50	Pinyon/Juniper woodland	10-20	Medium to rapid	Moderate to very high	10-20
36 ^A	Glendive fine sandy loam	2-4	Foothills swale	≥ 60	Slow	Slight	> 60
73 ^A	Rentsac channery loam	5-50	Pinyon/Juniper Woodland	10-20	Rapid	Moderate to very high	10-20
87 ^A	Starman-Vandamore complex	5-40	Dry Exposure	10-40	Medium	Moderate to very high	10-40
91 ^A	Torriorthents-Rock outcrop complex	15-90	Stony Foothills	10-20	Very rapid	Very high	N/A
96 ^A	Veatch Channery loam	12-50	Loamy slopes	20-40	Medium	Moderate to very high	20-40
50 ^B	Irigul-Starman channery loams	5-35	Dry Exposure	8-20	Medium to rapid	Moderate to very severe	≥ 11
56 ^B	Parachute-Irigul-Rhone association	25-50	Loamy slopes	10-40	Rapid	Very severe	10-40
57 ^B	Parachute-Rhone loams	5-30	Mountain Loam	20-60	Medium to rapid	Moderate to very severe	≥ 55
63 ^B	Silas loam	1-12	Mountain swale	≥ 60	Slow	Slight to very severe	≥ 60
65 ^B	Torriorthents, cool	35-90	Pinyon/	4-60	Very	Very severe	4-60

Summary of Project Area Soil Units

Soil Map Unit	Soil Unit Name	Slope (%)	Ecological Site	Effective Rooting Depth (in.)	Runoff	Erosion Potential	Bedrock Depth (in.)
	Rock outcrop complex		Juniper		rapid		
67 ^B	Tosca channery loam	25-80	Brushy loam	≥ 60	Rapid	Very severe	≥ 60

^A – soil unit information from NRCS (2004) Rio Blanco County

^B – soil unit information from NRCS (2003) Douglas Plateau

The majority of soil units have listed salinity values of less than 2 mmhos per centimeter. Rentsac and Tosca channery loams have listed salinity values less than 5 mmhos per centimeter. Glendive fine sandy loam and Torriorthents cool-Rock outcrop complex have listed salinity values up to 8 mmhos per centimeter. Eight of the soil units indicate the potential for a fragile soil with listed slope ranges than exceed 35 percent, the criteria that would trigger implementation of a Controlled Surface Use stipulation. Portions of access roads and pipelines may cross areas designated as having high potential for landslides. The need for implementation of additional mitigation measures and/or stipulations would be determined on a case-by-case based as APDs are submitted.

Environmental Consequences of the Proposed Action: Pipeline and well pad construction would remove surface cover and disturb soils, thus potentially increasing soil erosion and reducing soil health and productivity. Actions considered in this analysis and their potential to produce soil disturbance are as follows:

Access for the proposed pipeline and well pads is from the Piceance Creek road along the existing roads in the Willow Creek drainage. The roads are in generally acceptable condition and no improvements other than maintenance and possibly gravel placement are anticipated. New construction would occur at two points on these roads, where the road would be rerouted near the P09 497 location and where the road would be made less steep near the B30 497 location, and where short access roads would be built at the other locations. Construction of the P09 497 well pad and the reroute of the road up East Willow Creek would repair the gullied section of the unnamed side-drainage into East Willow Creek and, with proper maintenance should stop or reduce the rate of gully formation in the drainage. Proper construction and successful reclamation of the stream crossing at the B30 497 location would not increase erosion potential at that site.

The proposed trunk line construction along the east side of the existing road up Willow Creek has a length of 7.1 miles with an assumed disturbance width of 60 feet. In those portions of East Willow Creek where side slopes on the east side of the road exceed 25 percent (about 4,000 feet in total length, most of the placement in East Willow Creek), it's recommended that the construction and permanent right-of-way be limited to 30 feet immediately adjacent to the road. As part of the reclamation for the portions of the pipeline in East Willow Creek, mitigation specified in the Water Quality section specifies that the road be given frequent drainage relief, including sediment ponds or sediment sumps, and additional water bars or culverts to move drain water into East Willow Creek. To avoid further erosion and sediment deposition into the creek, appropriate erosion controls on the outlet side, e.g. jute mats or armoring with rock, would be

installed. Fill slopes adjacent to stream channels would be vegetated to minimize erosion. Implementation of these measures could reduce the amount of erosion produced by the roadway.

The proposed L34 397, D03 497, P04 497, P09 497, L33 497, O28 497, G29 497, and B30 497 well sites would each have an initial disturbance of 3.2 acres; 1.3 acres at each site would remain unvegetated for the life of the project.

Access roads to the eight well sites total 2,300 feet. The analysis assumes that gathering lines would be constructed next to the roads and that they would have a combined unvegetated width of 30 feet for the life of the wells.

The majority of the trunk and gathering pipelines are located on private land. Of the total 12 miles of pipeline, 9 miles are on private surface and 3 miles are on BLM surface. Well pads D03 497, P04 497, P09 497 and most of their access roads occur on BLM surface. In Garfield County, well pads G29 297 and B30 497 are on BLM surface and well pads L33 497 and O28 497 are on private surface. The following table presents estimated soil disturbance that would occur on BLM surface.

Soil Disturbance on Private and BLM Surface

Facility	Rio Blanco Soil Unit							Douglas Plateau Soil Unit		Total Area (acres)
	6	15	36	73	87	91	96	63	Other *	
Pipelines Located Adjacent to Existing Roads										
Feet	1760	5665	9500	15200	300	3600	4600	21120		
Acres	2.4	7.8	13.1	20.9	0.4	5.0	6.3	29.1		85.0
New Pad Access Roads with Co-located Pipeline										
Feet			2300					800		
Acres			3.5					1.1		4.6
Well Pads										
Acres			12.3			0.5		10.7	2.1	25.6
Total Area										
Acres	2.4	7.8	28.9	20.9	0.4	5.5	6.3	40.9	2.1	115.2
* Includes less than 1 acre each of Douglas Plateau soil units 50, 56, 57, 65, and 67.										

* Includes less than 1 acre each of Douglas Plateau soil units 50, 56, 57, 65, and 67.

The total area of disturbance on BLM surface over all soil units is estimated at 40.7 acres, half of which is for the pipelines. After successful reclamation, an estimated 8 acres would remain in an unvegetated state for the life of the project (30-40 years) or longer.

Just over half (54 percent) of total disturbance occurs in soil units that have relatively low erosion potential, the Glendive fine sandy loam and Silas loam, on slopes less than 7 percent. However, much of the pipeline's length in Willow Creek is on Rentsac channery loam and much of its length in East Willow Creek is on Torriorthents-Rock outcrop complex and Veatch Channery loam. The soil characteristics within these units and the slope of the terrain in areas where the pipeline is to be constructed indicate the need for implementation of strict erosion control practices, Best Management Practices, and revegetation. In fact, the very steep slopes associated with these soils in East Willow Creek coupled with the proximity of the deeply incised watercourse itself, would make pipeline installation challenging. Deep cuts into the hillside would be required and the potential for erosion is great. It is recommended that in those

areas where the side slope adjacent to the road is greater than 20 percent, the construction width of the pipeline right-of-way be limited to 30 feet and the applicant be permitted to use the roadway as a temporary work area.

Soil Disturbance on BLM Surface Only

Facility	Rio Blanco Soil Unit							Douglas Plateau Soil Unit		Total Area (acres)
	6	15	36	73	87	91	96	63	Other *	
Pipelines Located Adjacent to Existing Roads										
Feet		3020	1010	1500			2540	3700		
Acres		4.2	5.5	2.1			3.5	5.1		20.4
New Pad Access Roads with Co-located Pipeline										
Feet			1300					900		
Acres			3.3					1.0		4.3
Well Pads										
Acres			9.1			0.5		5.2	1.2	16.0
Total Area										
Acres		4.2	17.9	2.1		0.5	3.5	11.3	1.2	40.7
* Includes less than 1 acre each of Douglas Plateau soil units 50, 56, 57, 65, and 67.										

* Includes less than 1 acre each of Douglas Plateau soil units 50, 56, 57, 65, and 67.

Environmental Consequences of the No Action Alternative: None.

Mitigation: See recommended mitigation for Water Quality regarding a Stormwater Management Plan and standard COAs.

Interim reclamation will be required as addressed in the Air and Water Quality sections of this EA. Complete reclamation will follow abandonment of the well pads. Access roads and well pads will be recontoured and 100% of disturbed surfaces will be vegetated with the suggested seed mixture outlined in the Vegetation section of this EA.

To mitigate contamination of soils and local groundwater, environmental unfriendly substances (e.g. diesel) must not be allowed to contact soils. The use of impermeable matting under equipment (tanks, pumps, or other equipment used in handling hazardous liquids) is suggested to intercept and contain potential releases.

Segregation of topsoil material and replacement of topsoil in its respective original position (last out, first in) would assist in the reestablishment of soil health and productivity. Topsoil stockpiles should be seeded and covered with geotextile fabrics to minimize erosion and maintain viability of the topsoil resource.

In those areas where the side slope adjacent to the road is greater than 20 percent, the construction width of the pipeline right-of-way will be limited to 30 feet. In those areas, the applicant will be permitted to use the roadway as a temporary work area. Surface disturbance on slopes greater than 35% (fragile soils and landslide areas) will not be permitted without a BLM-approved engineered construction/reclamation plan.

Finding on the Public Land Health Standard for upland soils: Soils within the area of the Proposed Action meet the criteria established in the standard for upland soils. With successful reclamation, the Proposed Action would not change this status.

VEGETATION (includes a finding on Standard 3)

Affected Environment: Four principal plant communities on public land in the project area would be impacted: a basin big sagebrush community with a grass understory on alluvial deposited soils in the valley bottoms of Willow Creek and lower East Willow Creek, a grass and forb herbaceous community on drier aspects on the east toe-slopes of Willow and East Willow Creeks, a mountain shrub community with scattered Pinyon Pine and a herbaceous understory on more moist aspects on the east toe-slopes of Willow and East Willow Creeks, and a mountain big sagebrush community with a grass/forb understory on alluvial deposited soils in the valley bottoms of upper East and West Willow Creeks and in Bull Fork.

The ecological site for the basin big sagebrush community on the alluvial deposited soils in the lower valley bottoms is a Foothills Swale. The ecological site for the mountain big sagebrush community on the alluvial deposited soils in the upper valley bottoms is a Mountain Swale.

The ecological site for the herbaceous grass/forb valley slopes is a Stony Foothills site. This is a steep slope, a relatively barren site where blue bunch wheatgrass and fringed sage are the dominant plants. The plant community is late-seral with a composition of species that is approaching the potential for the site. Annual vegetation production is near the potential of about 100 pounds (air dry) per acre.

The ecological site mapped for the mountain shrub community is a pinyon/juniper woodland at lower elevations and a Loamy Slopes site at higher elevations. The plant communities for both ecological sites are approaching the potential for each site. Annual vegetation production is near the potential of about 500 to 600 pounds (air dry) per acre for lower elevation sites and 900 to 1,000 pounds (air dry) per acre for higher elevation sites.

Well pads P04 497, D03 497, P09 497, and L34 397, as well as their pipelines, are on alluvial deposited soils of the Foothills Swale ecological site. Well pads P04 497, D03 497, and P09 497 are located within undisturbed basin big sagebrush communities which consist of mid-seral plant communities that have a species composition less than 50 percent similar to that of the potential community for the Foothills Swale ecological site. Also, annual vegetation production is about half of the potential for the site at about 900 to 1,200 pounds (air dry) per acre. Well pad L34 397 is located on private land in a dryland hayfield. The following table shows the approximate cover of major plant species or groups of species for the four well pad locations.

Approximate Cover by Major Plant Species or Groups of Species
Foothills Swale Ecological Site (Lower Willow Creek Drainage)

Species/ Percent Cover	Well Pad P04 497	Well Pad D03 497	Well Pad P09 497	Well Pad L34 397
Basin Sagebrush	40-60%	30-40%	30-40%	2-5%
Rubber rabbit brush	2 %	2-5 %	2-5 %	2-5%
Snowberry	2 %	2-5 %	2-5 %	--
Native grasses	10-20%	15-20%	25-35%	40-50%
Smooth Brome	--	5-10%	--	20-25%
Cheatgrass	5-10%	5-10%	--	--
Native forbs	2-5%	5-10%	5-10%	10-15%
Bare ground	10-15%	0-5%	0-5%	0-5%

Well pads L33 497, O28 497, G29 497, and B30 497, as well as their pipelines, are on alluvial deposited soils of the Mountain Swale ecological site. Well pads O28 497, on private land, and B3 497, on public land, are located within undisturbed mountain big sagebrush communities which consist of late-seral plant communities with a species composition that is less than 50 to 75 percent similar to that of the potential community for the Mountain Swale ecological site. Also, annual vegetation production is about 75 percent of the potential for the site at about 1,500 to 2,000 pounds (air dry) per acre.

Well pad G29 497 is located on a mountain swale site on public land with an extensive infestation of yellow toadflax, a noxious weed. The area around the location has been treated with herbicide that has converted the vegetation on the site to perennial grasses with scattered sagebrush and rabbitbrush plants and toadflax infestations. All native forbs have been eliminated from the site by invasion of toadflax or by herbicide application. Several monocultures of yellow toadflax are present and occupy as much as 25 percent of the proposed location. The area in and around the location consists of an early-seral plant community with a species composition that is less than 25 percent similar to that of the potential community for the Mountain Swale ecological site. Annual vegetation production of desired plants is about 500 to 1,000 pounds (air dry) per acre (total of all plants is near 2,000 pounds).

Well pad L33 497 is located on private land in an old irrigated hayfield that is no longer cultivated. The following table shows the approximate cover of major plant species or groups of species for the four well pad locations in the upper reaches of the Willow Creek drainage.

**Approximate Cover by Major Plant Species or Groups of Species
Upper Willow Creek Drainage (Mountain Swale Ecological Site)**

Species/ Percent Cover	Well Pad L33 497	Well Pad O28 497	Well Pad G29 497	Well Pad B30 497
Mountain Sagebrush	2-5 %	30-35 %	5-10 %	10-15 %
Rubber rabbit brush	2-5 %	5-10 %	5-10 %	25-35 %
Snowberry	--	10-15 %	--	2-5 %
Native grasses	5-10 %	35-40 %	25-35 %	35-50 %
Native forbs	2-5 %	5-10 %	--	10-15 %
Cultivated grasses	40-60 %	--	--	--
Yellow toadflax	--	--	20-25 %	--
Bare ground	5-10 %	5-10 %	15-20 %	5-10 %

The proposed trunk pipeline from main Willow Creek to the Bull Fork compressor would affect three plant communities. The majority, approximately 70 percent, of the pipeline route would occur within the basin big sagebrush-dominated Foothill Swale ecological site. Vegetative cover on the pipeline route along Willow Creek is similar to the cover values noted for pad P04 497. Vegetative cover on the pipeline route along East Willow Creek is similar to the cover values noted for pad P09 497. Approximately 20 percent of the pipeline route would occur within the mountain shrub community. Vegetative cover in this community is about 50 percent native shrubs, 25 percent native grasses, 10 percent native forbs, and 15 percent bare ground. Approximately 10 percent of the pipeline route would occur within the grass/forb herbaceous community. Vegetative cover in this community is about 50 percent native grasses, 25 percent native forbs and 25 percent bare ground.

Environmental Consequences of the Proposed Action: An estimated 115 acres of disturbance could occur as a result of construction of the proposed facilities. The Proposed Action would remove all vegetation from the disturbed areas. About 32 acres of this disturbance would occur from construction of the eight new well pads and their access roads. About 17 acres of disturbance would occur within a basin big sagebrush plant community (Foothill Swale ecological site), and about 15 acres within a mountain big sagebrush plant community (Mountain Swale ecological site).

The remaining 83 acres of potential disturbance would occur from construction of pipelines – including about 48 acres within a basin big sagebrush plant community, 19 acres within a mountain sagebrush plant community, 11 acres within the mountain shrub plant community; and five acres in the grass/forb herbaceous community.

The disturbance from construction of the pipelines would be short-term and would remain non-vegetated for only a short period of time. If successfully reclaimed, nearly all of the disturbance from pipeline construction would be returned to the production of desirable perennial vegetation within a few years.

The disturbance associated with construction of the eight well pads would also be short-term and remain non-vegetated for only a short period of time during the drilling phase. A portion of each well pad could be reclaimed following the drilling phase, leaving only the production area of the well pad and the road travel surface non-vegetated. As much as 75 percent of the original disturbance could be returned to production of desirable vegetation within three to five years. The remaining disturbance (eight to ten acres) could remain non-vegetated for a considerable length of time depending upon the success and life expectancy of the wells on the eight pads.

Disturbances associated with the proposal would be subject to an invasion of very competitive weedy plants, some native and some not. Invasion of these weedy species could create problems in future reclamation efforts. It usually takes at least two growing seasons for these species to develop sufficient seed for dominance of the disturbance. The longer the disturbance remains non-vegetated, the greater the chance for invasion by these weedy plants. Once the disturbance becomes dominated by weedy species, reclamation with desirable native perennial species becomes very difficult. What should be a short-term impact could become a long-term invasion

of weedy species that usually requires additional resources and strategies to control so that successful reclamation can be achieved.

The loss of native, deciduous shrubs from the mountain shrub community would be a long-term impact to that plant community. These shrub species are very difficult to reestablish by conventional reclamation practices. Regeneration by natural processes is probably the most effective strategy; 40 to 50 years could be required to achieve the pre-disturbance levels.

Loss of basin big sagebrush from the Foothills Swale ecological site is expected to be a short-term impact. This particular variety of sagebrush is very competitive in reestablishing on disturbed areas by means of natural processes. Reestablishment on disturbed areas is expected within five years, returning to pre-disturbance levels within 15 years. Likewise, loss of mountain big sagebrush from the Mountain Swale ecological site is expected to be a short-term impact. This particular variety of sagebrush is competitive in re-establishing on disturbed areas by means of natural processes. It is expected to re-establish on disturbed areas within ten years, achieving pre-disturbance levels within 20 years.

Environmental Consequences of the No Action Alternative: None.

Mitigation: All disturbed areas for the trunk pipeline from main Willow Creek to the Bull Fork compressor and well pad locations P04 497, D03 497, P09 497, and L34 397 would be reclaimed with the following seed mix:

Native Seed Mix #5

Species	Pure Live Seed*
Basin Wildrye (Magnar)	2 lbs/acre
Western wheatgrass (Rosanna)	3 lbs/acre
Bluebunch wheatgrass (Secar)	1 lb/acre
Thickspike wheatgrass (Critana)	2 lbs/acre
Fourwing saltbush (Wytana)	1 lb/acre

* Rate for drill seeding. Double rate for broadcast/harrow seeding

All disturbed areas for well pad locations L33 497, O28 497, G29 497, and B30, as well as their associated pipelines would be reclaimed with the following seed mix:

Native Seed Mix #6

Species	Pure Live Seed*
Basin Wildrye (Magnar)	2 lbs/acre
Western wheatgrass (Rosanna)	2 lbs/acre
Slender wheatgrass (Primar)	2 lbs/acre
Mountain brome (Bromar)	2 lbs/acre
Big bluegrass (Sherman)	1 lb/acre
Fourwing saltbush (Wytana)**	1 lb/acre
Rocky Mountain penstemon	1 lb/acre

* Rate for drill seeding. Double rate for broadcast/harrow seeding

** Per requirements specified in the Threatened, Endangered and Special Status Species Section, ¼ lb of locally- gathered mountain sagebrush seed will be substituted at well site L33 497 (DW-P054),

All pipeline routes would be reclaimed within the first growing season or prior to the first full growing season following disturbance.

Successful revegetation should be achieved within three years. The operator would be required to monitor the project site(s) for a minimum of three years post-construction to detect the presence of noxious/invasive species. Any such species that occur would be eradicated using materials and methods approved in advance by the AO.

Areas of the eight well pads not used during any production phase, including cut-and-fill slopes, would be contoured to a slope of about 5:1, and would have topsoil redistributed and revegetated with the appropriate seed mix noted above prior to the first full growing season following completion of drilling. Final reclamation of roads and well pads following abandonment would be achieved with the appropriate seed mix noted above.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): With the exception of the plant community at well pad location G29 497, the plant communities within the area of the Proposed Action have an appropriate structure and diversity of species which meet the criteria established in the standard for vegetation. With successful reclamation, the Proposed Action would not change this status.

The plant community at well pad G29 497 in Bull Fork is not meeting standards because of the yellow toadflax infestation at and around this location. If the mitigation measures to prevent spread of yellow toadflax developed in the invasive species section above are committed to and implemented, the actions proposed at this location would neither detract from nor improve the attainment of the required standard.

WILDLIFE, AQUATIC (includes a finding on Standard 3)

Affected Environment: The Willow Creek valley between the TransColorado Pipeline crossing and the confluence of East and West Willow Creeks contains several small ponds and one larger pond. This area is almost entirely privately owned with the exception of a ¼-mile-wide strip and several corners of public land extending onto the valley floor. The stream channel has been altered in the past to develop storage structures and to divert water for irrigation of hay meadows. The structures provide riparian and aquatic habitat, while the stream channel is intermittent during the summer, often being diverted for irrigation. Waterfowl and shorebirds typical to the Piceance Creek drainage utilize these water bodies during migration and the nesting season. The characteristics of fisheries within the ponds and small lake are not known, as all are located on private land. Trout and possibly other non-native fish have been introduced in the past.

East Willow Creek below the Bull Fork compressor station is a perennial stream located in a narrow canyon bottom and a deeply incised gully. In a number of locations in East Willow Creek, runoff from the existing road flows directly into the adjacent stream channel. The stream channel is narrow (one to two feet wide) and shallow with a poorly developed strip of riparian vegetation along each bank. The stream channel is a continuous riffle (two to four inches deep)

and generally lacking in pools. Rainbow trout have been noted in this segment of East Willow Creek and are thought to be the result of stocking on private land in upper East Willow or main Willow Creek.

The upper portion of East Willow Creek, above the Bull Fork compressor, contains a small perennial flow. Generally the stream has little structure, being a shallow riffle bordered by sedges. At well pad L33 497, a late summer flow approximately one foot wide and two to three inches deep is confined to a four- to five-foot-deep U-shaped channel. Flow is continuous down East Willow Creek to Bull Fork with several small stock ponds still evident. At well pad O28 497, flow is confined to a deep (15 feet) V-shaped gully. Rainbow trout likely utilize upper East Willow Creek, especially during seasons of higher flow. At well pad B30 497 on West Willow Creek, a deep (20 feet) V-shaped gully contains a trickle of water with little potential for supporting aquatic life other than invertebrates.

Environmental Consequences of the Proposed Action: The proposed pipeline in main Willow Creek and lower East Willow Creek would be located within the existing roadway or along the east side of the road, away from the main stream channel. An exception would occur at well site P09 497 where the road would be relocated closer to the East Willow Creek channel. The new road location would not infringe on the existing channel. Increases in runoff and sediment load would result from well pad, road, and pipeline construction, degrading water quality and aquatic habitat. Reclamation practices could lessen the impacts over time, but road surfaces and portions of well pads would continue to add sediment long-term. These impacts would be similar to those currently occurring from the existing roadways, but are expected to exceed current levels. Aquatic habitat occurring in East Willow Creek is likely to be impacted to the greatest degree. The new road, pipeline, and road relocation would be immediately adjacent to the main channel, providing little opportunity for sediment to settle out prior to entering the main stream. In the Willow Creek segment, the road, pipeline, and well pads would be generally situated further from the main channel, allowing heavier materials to settle out before entering the main stream channel. These impacts would be ameliorated and, in fact, current levels of sedimentation could be reduced if the mitigation proposed in the Surface Water Quality section were implemented, especially with regard to water management on the road up East Willow Creek.

Waterfowl utilizing the small water bodies located in the Willow Creek valley would be subjected to additional vehicle traffic and disturbance. Currently, birds seldom flush as a result of existing traffic and appear to have habituated to a considerable level of human activity.

Well pads L33 497, O28 497, and B30 497, located on the upper reaches of East and West Willow Creeks, would be situated adjacent to perennial stream channels. Well pad fill slopes and surface runoff would have the potential to add considerable sediment load to East and West Willow Creeks. In particular, the location of L33 497 would make it very difficult, if not impossible, to mitigate movement of sediment into the stream channel.

Environmental Consequences of the No Action Alternative: The opportunity to improve the drainage crossing at the road relocation site and lessen the chances of major sedimentation occurring in East Willow Creek would be lost. Runoff from the existing road would continue to

flow directly into East Willow Creek at numerous locations, contributing considerable sediment and degrading aquatic habitat.

Mitigation: See recommended mitigation for Water Quality regarding a Stormwater Management Plan, standard RMP COAs and engineered design of structures placed in and near well pads P09 497 and B30 497.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation): With successful implementation of recommended mitigation, this project would not jeopardize the viability of any aquatic animal population. It would have no significant consequence on aquatic habitat condition, utility, or function, nor any discernible effect on animal abundance or distribution at any landscape scale. The public land health standard would thus be met.

WILDLIFE, TERRESTRIAL (includes a finding on Standard 3)

Affected Environment: The project area is located in the bottom of Willow Creek canyon from the Trans-Colorado Pipeline crossing on the north to the upper reaches of East Willow Creek, Bull Fork of Willow Creek, and West Willow Creek on the south. This is a distance of approximately ten miles with an elevation change from 6,500 feet on the north to 7,650 feet on the south. The valley bottom is generally less than ¼ mile wide, becoming much narrower in the upper reaches of East Willow, West Willow, and the Bull Fork. The main access road up Willow Creek lies on the east side of the valley bottom. The lower portion of Willow Creek to as far south as the junction of East and West Willow is a series of wet and dry meadows interspersed between segments of basin big sagebrush. The hillsides support open stands of pinyon and juniper near the valley floor which increase in tree density upslope and on the ridge crests. South of the confluence of East and West Willow to the Bull Fork compressor station, the valley bottom is very narrow with a deeply incised gully. In this section, basin big sagebrush dominates the valley bottom and mountain shrub dominates the side slopes. On upper East Willow Creek, West Willow Creek, and the Bull Fork of Willow Creek, the drainage bottoms are narrow and generally support a mountain sagebrush habitat. Hillsides are steep mountain shrub except on dryer exposures where grass/forb or mountain sagebrush may dominate. Above 7,600 feet, small stands of aspen occupy some north exposures.

Willow Creek Pipeline Corridor: Side slopes on the northern portion of main Willow Creek are covered with stands of medium-size pinyon/juniper trees. These stands tend to be open near the valley floor, increasing in density up the slope. Suitable accipiter (sharp-shinned and Cooper's hawk) and other raptor-nesting habitat occur near the ridge crests or in the head of side draws. The more suitable areas are generally several hundred feet upslope and greater than ⅛ mile removed from the roadway. A large portion of the adjacent steep-sloped pinyon juniper habitat is located on private land. On April 13, 2004, a portion of the bench top habitat on BLM (Sec. 14 E½SW, SWSW) was surveyed for raptor nests. No evidence of raptor nest activity was noted.

Suitable cliffs for raptor nesting are very limited within the Willow Creek drainage. No cliffs are located on the east (road) side of the valley. Several small cliffs or prominent rocky points are located on the west side, particularly in the vicinity of well site E-P033 (not evaluated in this

assessment; located on private land in the SESE of Sec. 22, T3S, R97W). Raptor surveys on May 21, 25, and 28, 2004 located an active golden eagle nest on cliffs near this well site (UTM 12S 0734250, 4405442). On two separate occasions, a golden eagle was observed flying in the area and landing near the nest site while vehicles and people were present on the main road. It appeared to be little affected by their presence. This site was again active in 2005.

The main access road and adjacent trunk pipeline are located on the edge of the valley floor in basin big sagebrush; in spots, the pipeline encroaches on side slopes of open pinyon/juniper. The majority of the project area is located on elk winter range and within an elk concentration area. The area north of the Bull Fork confluence with East Willow Creek is mule deer winter range, although none of the area is considered critical winter range for either mule deer or elk.

Well Pads L34 397, P04 497, D03 497, and P09 497: Well pad locations and the surrounding areas were evaluated for raptor nesting habitat. No well pads are located in suitable raptor nesting habitat and only well pad D03 497 has trees of adequate size and density nearby that offer good potential for raptors. A pinyon/juniper-covered ridge and a bench area adjacent to the original location for well D03 497 were searched for evidence of raptor nesting on May 25, 2004; no such evidence was found. The well location has since been moved to the west, increasing the distance between suitable raptor habitat and development.

Well pads P04 497 and P09 497 are located in the bottom of East Willow Creek. At these locations, open stands of pinyon/juniper occur at mid-slope on steep, south-facing slopes. The small stature and open spacing of trees on the slopes provide only marginal potential for raptor nesting. Since these stands were over 1/8 mile from the well pads, no search was conducted. Well site L34 397 is located on main Willow Creek between the main road and the creek channel. The west slope of the valley contains small cliffs and rock outcrops of marginal value for raptor nesting. These features were glassed for stick nests and whitewash on May 21, 2004. No evidence of raptor use was noted on cliffs in the immediate area of the well site.

All the well pads are located in stands of basin big sagebrush, although on well pad P09 497, sagebrush has been eradicated in the past; it is currently occupied by scattered sagebrush, rabbitbrush, and seeded grasses, predominantly smooth brome. All well pads and the short access roads leading to them contained signs of elk and deer use; the most significant use was noted at well pad D03 497. This location is in an east side draw to Willow Creek. Considerable elk sign was noted in the sagebrush draw and very heavy use in the form of trails and droppings was noted on the side hills and benches to the south and east of the well location.

Well Sites L33 497, O28 497, G29 497, and B30 497): These well sites and their associated roads and pipelines are located in the bottoms of East Willow Creek, West Willow Creek, and the Bull Fork of Willow Creek between 7,500 and 7,650 feet in elevation. At this elevation, a good herbaceous layer of forbs and grasses within mountain sagebrush, mountain shrub, and aspen habitats provides very good summer range for deer and elk. Ridge-tops here are rounded with only moderately steep slopes, offering little in the way of rock outcrops or cliffs for raptor nesting. Aspen groves begin to appear on northern exposures. Although many groves are small in size and stature, they do provide potential nesting habitat for raptors. These smaller stands

offer greatest potential for red-tailed hawk, kestrel, and smaller accipiters (sharp-shinned and Cooper's hawks).

Environmental Consequences of the Proposed Action: The construction of eight well pads and their associated access roads and pipelines, one segment of road relocation, and pipeline construction adjacent to the main access roads would remove about 115 acres of elk and deer foraging habitat. On deer and elk winter range most of the habitat removed would be basin big sagebrush, which may ultimately be more productive when successfully seeded to perennial grasses and forbs. Winter development and drilling at well pads P09 497 and D03 497 would be particularly detrimental to elk as involved draws and adjacent slopes are heavily utilized and certainly warrant designation as a winter concentration area. Elk concentration areas do not provide for a seasonal timing restriction. Currently the elk population for the area exceeds goals established by the Colorado Division of Wildlife (CDOW). As elk numbers are in excess of desired levels, no timing limitations are being applied to habitat not considered severe winter, critical habitat. Well pad, pipeline, and road construction associated with the four well sites located on deer and elk summer range would remove primarily mountain sagebrush habitat.

Pipeline construction has the potential to disturb raptor-nesting activity, although destruction of habitat is not likely to occur as no aspen trees or suitable stands of pinyon/juniper trees would be removed. The greatest potential for disturbance is on the east side of Willow Creek along the northern portion of the route and to aspen groves adjacent to well locations in the southern portion of the project area. The golden eagle nest located on the west side of Willow Creek could be disrupted by pipeline construction during the nesting season. The nest site is located approximately ¼ mile across the valley floor from the existing main access road and well location. This nest site has been subjected to considerable road use over the past two nesting seasons and apparently has successfully fledged young. Disturbance may be most critical early in the nesting cycle when adults are selecting nest sites.

Environmental Consequences of the No Action Alternative: No additional disturbance of big game associated with commercial oil and gas development and no net loss of habitat in elk and deer winter and summer range would occur at this time and place. Use of the road corridor would continue at its present levels.

Mitigation: Pinyon/juniper woodland habitat on the east side of the pipeline corridor has not all been surveyed for raptors nest sites. Since no cliffs are involved, red-tailed hawk, Cooper's hawk, sharp-shinned hawk and long-eared owl are raptors of concern. No pipeline construction should occur between April 1 and August 15 or until areas within ¼ mile have been surveyed for nesting raptors (T.3 S R.97W Sec. 22 SESE; Sec. 23 W½W½; Sec. 27 W½E½, NENE; Sec.34 NWNE, E½NW, NESW; T.4S R.97/W Sec. 3 NWNW).

In the upper reaches of the project area, isolated aspen groves offer very good potential raptor nesting habitat, as other habitat types in the area offer little suitable structure for locating nests. All four well sites in the upper reaches are located within ¼ mile of aspen groves. No well pad construction or drilling should occur between April 1 and August 15 or until aspen groves adjacent to well sites have been surveyed for nesting raptors (L33 497, T.4S R.98 W sec.33

SWSW; O28 497, T.4S R.98 W sec. 29 SWSE; G29 497, T.4S R98 W sec.29 NWSE; B30 497, T.4S R.98 W sec.30 NENW).

The use of interim reclamation techniques will be used to the extent practicable on pads located on BLM-administered surface (i.e., B30 497, G29 497, D03 497, P04 497, P09 497) such that: 1) all available topsoil material would be used to rehabilitate recontoured cut and fill slopes and areas outside the anchors (maintaining the viability of the soils for final reclamation), 2) production facilities are located to maximize the extent of surface disturbance available for recontouring and reclamation after completion operations and through the productive life of the well (e.g., use of production pad or on-pad at point where access road enters pad), and 3) disturbed areas are recontoured, revegetated, and, if necessary, effectively fenced to control livestock use once well completion activities have been finalized (this includes cut and fill slopes of roads and trial application on the roadbeds themselves).

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Terrestrial): This project would not jeopardize the viability of any animal population. It would have no significant consequence on terrestrial habitat condition, utility, or function, nor have any discernible effect on animal abundance or distribution at any landscape scale. The public land health standard would thus be met.

OTHER NON-CRITICAL ELEMENTS: For the following elements, only those checked in the last column will be addressed further in this EA.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Access & Transportation			X
Cadastral Survey	X		
Fire Management			X
Forest Management	X		
Geology and Minerals			X
Hydrology/Water Rights			X
Law Enforcement	X		
Noise			X
Paleontology			X
Rangeland Management			X
Realty Authorizations			X
Recreation			X
Socio-Economics			X
Visual Resources			X
Wild Horses	X		

ACCESS AND TRANSPORTATION

Affected Environment: Principal access to the project area is via the established roads up Willow Creek, West Willow Creek, East Willow Creek and the Bull Fork. The access route proceeds south from the Piceance Creek Road (County Road 5) for about four miles to the point

where the TransColorado Pipeline crosses the road and the project area begins. It continues about 4½ miles to the point where West Willow Creek and East Willow Creek merge into Willow Creek and another four miles up West Willow Creek to well pad B30 497. The remainder of the proposed sites are accessed by the road that proceeds about 2½ miles up East Willow Creek to the Bull Fork compressor and then up East Willow another three miles to L33 497 or up the Bull Fork another 1½ miles to G29 497 (Figures 2 and 3). All but about 1/3 mile of the Willow Creek portion of the road is on private property. The road up East Willow Creek to the Bull fork compressor is largely on BLM land and is designated BLM Road 1010. From the compressor south up East Willow, the road is entirely on private surface; from there up Bull Fork, the road is on BLM land. About 75 percent of the road up West Willow Creek is on public land. The road up Willow Creek and West Willow Creek is in generally good condition and is already used for ongoing oil and gas development activities under BLM right-of-way grant COC66509. Use of the portions of the roads up East Willow and the Bull Fork that are on public land would be authorized under the APDs as appropriate. The only improvements currently planned on these roads are the realignment near well pad P09 497 and the reconstruction near well pad B30 497.

The entire Proposed Action would occur within an area where motorized vehicle traffic is limited to existing roads from October 1 to April 30 each year. Cross-country motorized vehicle travel is allowed from May 1 to September 30 as long as no resource damage occurs as a result. A two-track road located in the drainage where the P09 497 well pad is planned provides potential access from East Willow Creek east up to Scandard Ridge.

Environmental Consequences of the Proposed Action: Construction and operation of gas wells and associated access roads and pipelines at the planned L34 397, P04 497, P09 497, D03 497, L33 497, O28 497, G29 497, and B30 497 sites would cause a temporary increase in traffic up the road for a period of two to four months at each site – perhaps up to 32 months overall if only one drill rig were used. After that, well service traffic to the nine sites would be regular but of low intensity. Construction of the trunk pipeline adjacent to the road would increase traffic along the road and would also at times disrupt the flow of traffic, as pipeline construction equipment and materials moved on and off the line. Simultaneous construction of any project features would intensify the use of the road.

New short access roads to the eight well pads would have no impact on access to public lands since the pads are near existing access roads and do not improve off-road access. The P09 407 could interfere with traffic up the drainage toward Scandard Ridge if the pad is not constructed to allow such traffic to cross the pad and exit on the east side of the pad.

Environmental Consequences of the No Action Alternative: None.

Mitigation: Road construction and maintenance standards and procedures would be implemented as described in the APD's 13 Point Surface Use Plan.

Because of the confining nature of the terrain in the drainage where the P09 497 well pad is to be located, the pad should be constructed so as to allow traffic across it and easy exit onto the two-track road that continues east up the drainage.

FIRE MANAGEMENT

Affected Environment: An estimated 115 acres of disturbance could occur as a result of construction of the proposed facilities. About 17 acres of this disturbance would occur from construction of the eight new well pads and their access roads within a basin big sagebrush plant community (Foothill Swale ecological site) and about 15 acres from construction of well pads and access roads within a mountain big sagebrush plant community (Mountain Swale ecological site). The remaining 83 acres of potential disturbance would occur from construction of pipelines – including about 48 acres within a basin big sagebrush plant community, 19 acres within a mountain sagebrush plant community, 11 acres within the mountain shrub plant community; and five acres in the grass/forb herbaceous community.

The mountain shrub community includes some scattered Pinyon Pine, making up less than five percent of the vegetation affected by the project. Where existing tree cover is encountered, there will be a need for the operator to clear these trees. If not adequately treated, these trees will result in elevated hazardous fuels conditions and remain on-site for many years. These accumulations of dead material are very receptive to fire brands and spotting from wind driven fires and can greatly accelerate the rate of spread of the fire front.

The National Fire Plan calls for “firefighter and public safety” to be the highest priority for all fire management activities. In the pinyon, juniper, and brush types common on the White River Resource Area, roads and other man-made openings are commonly used as fuel breaks or barriers to control the spread of both wildland and prescribed fires. By reducing the activity fuels created from this proposal, future fire management efforts in this area should be safer for those involved and more effective.

Environmental Consequences of the Proposed Action: There may be five to seven, non-contiguous acres of trees removed for pipeline construction. That fuel type ranges from 10-40 tons/acre. If not treated, the slash and woody debris would create an elevated hazardous dead fuel loading that could pose significant control problems in the event of a wildfire. Additionally there would be a greater threat to the public and to fire suppression personnel.

Environmental Consequences of the No Action Alternative: None

Mitigation: Fire avoidance and prevention measures would be implemented as described in the APD’s 13 Point Surface Use Plan.

Vegetative material brought back onto the pipeline should not exceed 2-5 tons/acre in any given location. Excess material should be distributed along sections of the pipeline that traverse through sagebrush habitats or less dense PJ sites or chipped and scattered along the corridor.

GEOLOGY AND MINERALS

Affected Environment: The surficial geology in the project area is the shallow dipping Tertiary Uinta Formation within the Green River Formation (Tweto, 1979). The Green River Formation is comprised of organic-rich shaley limestone, shale, marlstone, and sandstone, and is

rich in fish, insect, and plant fossils. The Green River Formation contains very substantial amounts of “oil shale” which is actually a kerogen-rich marlstone (Foutz, 1994). Other mineral resources in the project include gas, coal, and nahcolite. EnCana’s targeted zone in all the wells is in the Mesaverde. During drilling, potential water, oil shale, coal, oil, and gas zones would be encountered from the surface to the targeted zone. This area is identified in the ROD/RMP as available for underground oil shale leasing and development.

Environmental Consequences of the Proposed Action: The cementing procedure of the Proposed Actions isolates the formations and, if properly done, would prevent the migration of gas, water, and oil between formations. The coal zones located in the Mesaverde would also be isolated during this procedure. These zones are at a depth greater than 3,000 feet and the coal is not recoverable by conventional methods. Development of these wells would deplete the hydrocarbon resources in the targeted formation. Depending on the number of additional wells, future development of underground mining of the oil shale in and around existing wells may be limited.

Environmental Consequences of the No Action Alternative: None.

Mitigation: None.

HYDROLOGY AND WATER RIGHTS

Affected Environment: The majority of the resource area was inventoried in the early 1980’s for springs. The following table lists springs that are identified in the WRFO Water Atlas within 0.5 miles of the proposed project area.

BLM Inventoried Springs in the Project Area

Map Code	Name	Legal Description	Water Right Case #	SC	pH	Q (gpm)	Date	Comment
172-07		NESW, Sec 14, 3S 97W	85CW347	1869	7.6	386	9/1/83	Perennial
172-08		NESW, Sec 27, 3S 97W	85CW347	1788	7.6	4490	9/7/83	Perennial
172-09	USGS W-4 Sta 133 Flume/spring	NESW, Sec 27, 3S 97W	-	1512	7.6	94.3	9/6/83	Perennial
185-38		SESE, Sec 16, 4S 97W	85CW373	2079	8.2	14.7	9/7/83	Perennial

The BLM is entitled to 0.04 cfs absolute water rights on springs 172-07 and 172-08 for the use of livestock and wildlife water with a priority date of 9/7/1983. Typically water rights are not granted on springs that do not maintain a perennial flow.

Environmental Consequences of the Proposed Action: No impact on groundwater or springs is anticipated. Shallow aquifers are protected from hydrofracturing and the producing of oil and gas by installation and cementing of surface and intermediate casing. The objective of surface and intermediate casing is specifically to case off and isolate shallow aquifers.

Environmental Consequences of the No Action Alternative: None

Mitigation: None.

NOISE

Affected Environment: The roads up Willow Creek, West Willow Creek, Bull Fork, and East Willow Creek are generally the primary sites of man-made noise within the Willow Creek project area. Traffic up and down the roads to oil and gas facilities in Willow Creek and its tributaries produces varying degrees of noise throughout the day, with very little noise during the night. The Bull Fork compressor itself is the primary noise source in East Willow Creek. There are no permanently occupied residences within the project area. Those people subject to noise generated in the project area are, for the most part, employees of the oil and gas companies. Ranchers and hunters, in season, are also subject to noise generated in the area.

Environmental Consequences of the Proposed Action: Well pad construction and well drilling would generate noise for two to four months at each site. The Colorado Oil and Gas Commission has established a noise limit of 55 decibels (dBA) as the limit for oil and gas facilities in residential areas. (This can be compared to average highway noise of 60 dBA at 100 feet.) The 55 dBA limit would be reached at 1,500 feet from a well pad construction site and at 800 feet from an operating drill rig, although the rig would be operating 24 hours a day for the period of drilling (USDI BLM, 2004). Local winds and terrain could cause that distance to vary considerably in different parts of the project area and at different times.

Environmental Consequences of the No Action Alternative: None

Mitigation: None.

PALEONTOLOGY

Affected Environment: The proposed well pads, road realignment, and pipeline construction are all located in an area mapped as the Uinta Formation (Tweto, 1979). BLM has classified the Uinta as a Category I formation, meaning that it is a known producer of scientifically significant fossils.

Environmental Consequences of the Proposed Action: Since the actions proposed in the project area would all occur within the Uinta formation, there is potential for impacting fossil resources if it is necessary to excavate into the underlying bedrock formation to construct the well pads, including the reserve/blooiie pit, to construct or upgrade the access roads, or to install the pipelines.

Environmental Consequences of the No Action Alternative: None

Mitigation: All exposed rock outcrops in the project area would be examined by an approved paleontologist with a report detailing the results of the inventory; any mitigation recommendation would be submitted to the BLM prior to the initiation of construction on any of the well pads, compressor site, or road/pipeline right-of-way. A monitor would be present at any time that it becomes necessary to excavate into the underlying bedrock formation in order to bury pipelines, level well pads, or excavate reserve/blooiie pits, or to construct any project features.

Should fossil resources be discovered at any time during construction, all construction activity in the vicinity of the discovery would cease until the BLM and an approved paleontologist have evaluated the discovery and recovered the remains. Work would not resume in the area of the find without written approval of the AO.

RANGELAND MANAGEMENT

Affected Environment: The actions proposed occur within the Piceance Mountain grazing allotment. Locations P04 497, D03 497, and P09 497 occur within MTW Ranch's grazing use area of the allotment. The trunk pipeline from Willow Creek to the Bull Fork compressor is mainly within MTW Ranch's use area. Locations L33 497, O28 497, G29 497, B30 497, L34 397, and associated pipelines are on Pat Johnson's grazing use area of the Piceance Mountain allotment. Both ranches are permitted to run cattle on this allotment from May through mid-November each year. The facilities proposed occur within areas grazed from May through early September under a deferred rotation grazing system for both ranches.

Well pads P04 497, D03 497, P09 497, G29 497, B30 497, and associated pipelines are on public land within the allotment. Well pads L33 497, O28 497, and associated pipelines are on private land intermingled with and utilized with public lands within the allotment. Well pad L34 397 is on private land, separated by a fence from the Piceance Mountain grazing allotment.

The only rangeland improvements on public lands that would be impacted by the Proposed Action are a pasture fence and a livestock-fenced watergap at well pad B30 497. The pad location and access road would require relocation of the pasture fence. All other rangeland improvements, such as fences and gates, that would be impacted by the proposal occur on private land. Any mitigation for use or change of any improvements on private land would have to be negotiated with the landowner by the applicant.

Environmental Consequences of the Proposed Action: The actions proposed could result in 20 to 22 animal unit months (AUMs) of forage loss to livestock from the expected 113 acres of disturbance. An AUM equates to the forage needs of a mature cow with calf for one month. Due to the intermingled private lands in the area, forage loss from public lands would be approximately 45 percent of the total loss or about 10 AUMs.

The short-term forage loss for the MTW Ranch livestock operation would be 12 to 15 AUMs, of which six AUMs would occur on public land. The short-term forage loss for Pat Johnson's operation would be six to seven AUMs, of which four AUMs would occur on public land.

Most of this loss would be only short-term pending successful reclamation of disturbed areas. Reclamation of the pipeline and unused portions of the roads and well pads would likely offset the short-term forage loss within three to five years.

No long-term loss of forage for livestock is expected. Reclamation of the pipeline and unused portions of the roads and well pads could create at least as much forage for cattle as that lost during construction of the proposed facilities. The plant species used in reclamation would increase total herbaceous vegetation production of species palatable to cattle. Complete reclamation of the roads, pipeline, and well pads would probably provide a small long-term increase above the present forage available to cattle.

The pad location and access road for B30 497 would require relocation of the pasture fence, which could restrict livestock access to water at the watergap, especially for livestock trying to gain access from the east or south.

The most significant impact on livestock would be annoyance to cattle from construction and drilling activities and associated traffic, especially if this activity coincides with spring grazing. Cattle could be displaced from much of the project area if construction or drilling occurs during this time; such displacement would increase grazing pressure on other areas of the allotment.

The significance of this impact would depend upon the duration of disturbance. If of short duration, affected areas would likely absorb the impact and easily recover from heavier grazing use. However, extended heavy grazing would likely cause a decline in land production and health. Physical harm to livestock could occur from traffic accidents, open pits or trenches, or consumption of contaminated water or forage. Any livestock losses from operations conducted by the applicant would require a negotiated settlement between the applicant and the livestock owner.

Environmental Consequences of the No Action Alternative: None

Mitigation: The pasture fence at location B30 497 will require relocation to the east. The fence will be constructed to BLM specifications for a four-strand, barbed wire fence on big game ranges. Relocation of the fence will provide a minimum six-foot-wide path on the outside of the fence around the location and access road to be used for livestock access to the watergap on West Willow Creek.

REALTY AUTHORIZATIONS

Affected Environment: The main access routes for activities within the project area would be the roads up Willow Creek and its tributaries. The applicant holds a right-of-way across the portion of the road that crosses BLM in Willow Creek and proceeds up West Willow Creek (COC66509). The use of the road on BLM up East Willow Creek and Bull Fork, and any improvements to those roads – including the realignment near proposed well pad P09 497 and the reconstruction near well pad B30 497 – are part of the Proposed Action included in the APDs for the well pads. The proposed trunk pipeline next to the road from the TransColorado Pipeline tie-in to the Bull Fork compressor would cross unit boundaries and would require a BLM right-

of-way for those portions that cross public land. A power line is located on much of the pipeline's path up East Willow Creek. The power line is owned and operated by White River Electric Association and authorized by BLM right-of-way COC-37821.

Environmental Consequences of the Proposed Action: The realignment of the road up East Willow Creek near well pad P09 497 is part of the applicant's APD for the wells at that location. The proponent has submitted an application for the pipeline up Willow and East Willow Creek and the action has been serialized as COC70171. The right-of-way would have a permanent width of 30 feet and an extra 30-foot width for workspace. Total initial surface disturbance for the 37,397 foot long pipeline would be 56 acres, 18.3 acres on public land. The term of the right-of-way would be 30 years ending December 31, 2036.

Construction of a pipeline up East Willow Creek conflicts with a current use in the same alignment, the powerline owned by White River Electric. The applicant would have to make arrangements with White River for a temporary interruption of service or for relocation of the power line.

Environmental Consequences of the No Action Alternative: None.

Mitigation: The Conditions of Approval for each well would be made a part of the right-of-way grant stipulations plus any standard stipulations from the BLM right-of-way manual that would apply. The extra work width of 30 feet would be reclaimed and recontoured immediately after construction has been completed and weather permits.

A "Notice to Proceed" stipulation would be included in the right-of-way grant for the pipelines, indicating that construction of the pipelines would only be permitted to begin when the wells are producing.

RECREATION

Affected Environment: The Proposed Action occurs within the White River Extensive Recreation Management Area (ERMA). BLM custodially manages the ERMA to provide for unstructured recreation activities such as hunting, dispersed camping, hiking, horseback riding, wildlife viewing, and off-highway vehicle use.

The Willow Creek project area most closely resembles the Recreation Opportunity Spectrum (ROS) class of Roaded Natural (RN). RN settings are characterized by a generally natural environment with evidence of rural residences and agricultural land uses. Resource manipulations are noticeable and are harmonious with the natural environment, but substantial modifications may be encountered. The areas provide about equal opportunities for interaction with other visitors and to experience isolation from the sites and sounds of man.

Recreation use in the project area is low. No legal access into the Willow Creek project is available and physical access is strictly controlled. What recreation activity there is occurs primarily during big game hunting season. The southern end of the project area, in East Willow Creek, is included in a Special Recreation Permit held by MTW Ranch. Most hunting that

occurs in the area would take place under the control of the ranch, which controls the gated access off Piceance Creek.

Environmental Consequences of the Proposed Action: The public would lose very little dispersed recreation potential as a result of project activities since access to the area is strictly controlled. The quality of the recreation experience for those who do have access to the area would be diminished by the project. If drilling or well pad construction coincides with hunting season (September through November), they would most likely disrupt the experience sought by those recreationists.

Environmental Consequences of the No Action Alternative: None.

Mitigation: None.

SOCIOECONOMICS

Affected Environment: The proposed actions within the project area would be developed in Rio Blanco County but construction and drilling resources would also be drawn from Garfield County and Mesa County. Rio Blanco County had an estimated 2003 population of 6,033, almost unchanged from the 1990 level of 6,051. The major communities in the county are Meeker (2,263 population in 2003) and Rangely (2,088). The county underwent substantial economic and demographic growth in the late 1970's and early 1980's when major energy companies attempted to develop oil shale as a national energy fuel source. After a decline in jobs and population from the boom levels, the number of jobs and people in the county has remained static. Currently, the government sector makes up almost a third of all jobs in the county. The traditional farming and ranching sector has been supplemented in the last few years by a growing number of jobs in the oil and gas extraction industry as drilling activity has expanded.

Many of the labor and physical resources required for development of the oil and gas resource in the last few years have come out of Garfield County or Mesa County and located in Rio Blanco County on only a temporary basis. Most recently (fall 2005), several hundred workers have located in the Meeker area on a temporary basis while working on the construction of two natural gas transmission lines that pass through Rio Blanco County.

Other than natural gas exploration and development, livestock grazing is the only major economic activity that currently takes place within the project area. MTW Ranch holds a BLM Special Recreation Permit to provide guide and outfitting services in the southern end of the project area and to the east of the project area.

Environmental Consequences of the Proposed Action: The employment required for construction of the facilities in the Willow Creek project area would most likely not be new, but would use workers already available in the area. Some may very well reside in other western Colorado counties. Motels, restaurants, grocery stores, gas stations, and vehicle and equipment repair shops may all experience additional activity. The facilities developed by the Proposed Action would expand the local property tax base and the gas produced by the proposed wells would generate increased federal royalties. Half of those royalties would be returned to the State

of Colorado and to jurisdictions within Colorado, including Rio Blanco County. The net effect of these impacts would be considered beneficial but low.

No economic impact on the grazing operations of MTW Ranch is expected. The ranch is unlikely to experience diminished outfitting revenue in the near term, but that revenue may be at risk in the long term. Continued construction, drilling, and maintenance activities could force big game to disperse and thus reduce hunting success.

Environmental Consequences of the No Action Alternative: None.

Mitigation: None.

VISUAL RESOURCES

Affected Environment: Much of West Willow Creek, East Willow Creek, and the Bull Fork of Willow Creek lie on public lands administered by BLM. The BLM lands in this area have received a VRM Class III designation. The management goal for this class is to partially retain the existing character of the landscape. The change brought about by activities on lands with VRM III designation may be evident. The visual contrast may be moderate but should not dominate the natural landscape character. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Visual sensitivity in the area is low because access to the area is limited. Additionally, distance and intervening terrain shield the area from the most highly traveled route in the area, the Piceance Creek Road (CR 5). Local ranchers, a growing number of oil and gas company employees and contractors, and a few recreationists during hunting season make up the potential viewing public.

Environmental Consequences of the Proposed Action: The eight proposed well pads, with their associated access roads and pipelines, the re-alignment of the East Willow Creek road, and the construction of the trunk pipeline adjacent to the road would alter the landscape character. Removal of vegetation and recontouring of the natural surface during construction would introduce linear features into the landscape and offer contrasting soil and vegetation colors and patterns that had not previously been there. This change would lessen in the long term as exposed areas were reclaimed and bare soil was not so extensively evident. Additionally, above-ground natural gas production facilities such as well heads, metering sheds, condensate tanks, and compressor facilities would introduce man-made industrial facilities that would draw attention due to their size, color, and shape. The use of natural, non-reflective paint tones would reduce the visual impact of the facilities.

Viewed from the middle-background, the changes in the overall landscape of the project area would appear to be moderate and would not dominate the natural character of the landscape since they would be dispersed over a fairly large area. The character of the landscape would be partially retained, meeting the standards of the VRM III classification.

Environmental Consequences of the No Action Alternative: None

Mitigation: All permanent (on-site for six months or longer) structures, facilities, and equipment placed onsite would be low profile and painted Munsell Soil Color Chart Juniper Green or equivalent within six months of installation.

Interim reclamation measures described in the Vegetation section would be implemented to reduce the color contrast.

CUMULATIVE IMPACTS SUMMARY: One proposed oil and gas well pad in the Group E on-sites, E-P033 (T3S, R97W, SESWSE Sec. 14), is not included in this EA because it is located on fee surface and fee minerals. It would add about four acres of disturbance to the totals described in the EA. Two other well pads have been constructed in the Willow Creek drainage recently, both of them north of the project area. In previous years, six wells had been drilled in the West Willow Creek drainage and two in the Bull Fork drainage. Upon completion of the eight well pads described in this EA, the total number of well pads in the Willow Creek drainage would be 17.

Cumulative impacts from oil and gas development were analyzed in the White River Resource Area PRMP/FEIS. Current development, including the actions proposed in the Willow Creek project area, has not exceeded the foreseeable development analyzed in the PRMP/FEIS.

REFERENCES CITED

- Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Commission (WQCC), 2004a. Regulation No. 37 Classifications and Numeric Standards for Lower Colorado River Basin. Adopted 1983 and Effective January 20, 2004.
- CDPHE-WQCC, 2006a. "Status of Water Quality in Colorado – 2006, The Update to the 2002 and 2004 305(b) Report," April 2006.
- CDPHE-WQCC, 2006b. "Regulation No. 93, 2006 Section 303(d) List Water-Quality-Limited Segments Requiring TMDLs," effective April 30.
- CDPHE-WQCC, 2006c. "Regulation No. 94, Colorado's Monitoring and Evaluation List," effective April 30.
- Conner, Carl E. 2005. Class III Cultural Resource Inventory of a Short Pipeline Segment (2600 linear feet) in Willow Creek in Rio Blanco County, Colorado for EnCana Oil and Gas (USA) Inc. Grand River Institute. Grand Junction, Colorado.
- Conner, Carl E. and Barbara J. Davenport. 2004. Class III Cultural Resource Inventory Report for Eight Proposed Well Locations and an Existing 6.8 mile-long Access in the Eureka and Double Willow Lease Areas in Rio Blanco County, Colorado for EnCana Oil and Gas (USA) Inc. Grand River Institute. Grand Junction, Colorado.

- Conner, Carl E. and Barbara J. Davenport. 2004. Class III Cultural Resource Inventory Report for a 6.5-mile Section of the Proposed Willow Creek Pipeline Route in the Eureka and Double Willow Lease Areas in Rio Blanco County, Colorado for EnCana Oil and Gas (USA) Inc. Grand River Institute. Grand Junction, Colorado.
- Conner, Carl E. and Barbara J. Davenport. 2005. Class III Cultural Resource Inventory Report for the Proposed Eureka Unit #8807A Well Location in Rio Blanco County, Colorado for EnCana Oil and Gas (USA) Inc. Grand River Institute. Grand Junction, Colorado.
- Foutz, Dell R. 1994. Geology of Colorado Illustrated. Grand Junction, CO.
- Topper, R., K.L. Spray, W.H. Bellis, J.L. Hamilton, and P.E. Barkmann. 2003. Groundwater Atlas of Colorado, Special Publication 53. Prepared for State of Colorado Department of Natural Resources, Division of Minerals and Geology. Colorado Geological Survey. Denver, Colorado.
- Tweto, Ogden. 1979. Geologic Map of Colorado. United States Geologic Survey, Department of the Interior. Reston, Virginia.
- USDI Bureau of Land Management, Colorado. 1997. White River Record of Decision and Approved Resource Management Plan (ROD/RMP). Meeker, Colorado.
- United States Geological Survey (USGS), 2004. Colorado Water Resources on-line information at <http://www.co.water.usgs.gov/> for Gauging Station 0930658 "Willow Creek Near Rio Blanco, CO." Information downloaded on December 23, 2004.

PERSONS / AGENCIES CONSULTED: None

INTERDISCIPLINARY REVIEW:

Project Team		
Name	Title	Area of Responsibility
BLM Oversight		
Keith Whitaker	Natural Resource Specialist	Project Lead; Visual Resource Management
Paul Daggett	Mining Engineer	Geology and Minerals
Ed Hollowed	Wildlife Biologist	Migratory Birds; Threatened, Endangered and Sensitive Animal Species; Wildlife; Wetlands and Riparian Zones
Tamara Meagley	Natural Resource Specialist	Areas of Critical Environmental Concern; Threatened and Endangered Plant Species
Chris Ham	Outdoor Recreation Planner	Recreation; Wilderness; Access and Transportation
Mark Hafkenschiel	Rangeland Management Specialist	Vegetation; Invasive, Non-Native Species; Rangeland Management
Michael Selle	Archeologist	Cultural and Paleontological Resources
Nate Dieterich	Hydrologist	Air Quality; Water Quality, Surface and Ground; Hydrology and Water Rights; and Soils
Penny Brown	Realty Specialist	Realty Authorizations
Ken Holsinger	Natural Resource Specialist	Fire Management
Robert Fowler	Forester	Forest Management
Marvin Hendricks	Petroleum Engineer	Wastes, Hazardous or Solid
WestWater Engineering (Third Party Contractor)		
Dan McWilliams	Senior Engineer	Air Quality, Soils, Water Quality, Surface and Ground; Hydrology and Water Rights; Geology and Minerals
Carl Conner, Grand River Institute	Archaeologist	Cultural Resources
Steve Moore	Environmental Scientist	Areas of Critical Environmental Concern; Paleontological Resources; Wastes, Hazardous or Solid; Access and Transportation; Wilderness; Realty Authorizations; Recreation; and Visual Resources
Rusty Roberts	Range Conservationist	Threatened and Endangered Plant Species; Invasive, Non-Native Species; Wetlands and Riparian Zones; Vegetation; Fire Management; Rangeland Management; and Wild Horses
Doug McVean	Wildlife Biologist	Migratory Birds; Threatened, Endangered and Sensitive Animal Species; Wildlife, Terrestrial and Aquatic
Mike Klish	Environmental Scientist	Forest Management

**Finding of No Significant Impact/Decision Record
(FONSI/DR)
CO-110-2006-048-EA**

FINDING OF NO SIGNIFICANT IMPACT (FONSI)/RATIONALE: The environmental assessment, analyzing the environmental effects of the Proposed Action, has been reviewed. The approved mitigation measures (attached to the APDs as Conditions of Approval and to the right-of-way grant and other authorizations as stipulations) for the Proposed Action – construction of well pad P09 497 and drilling of wells 8608D and 8616B at that location with associated access road and pipeline; construction of a 7.1 mile trunk pipeline, COC70171, from the TransColorado Pipeline to the Bull Fork compressor; and construction of potentially seven more well pads at locations L34 397, P04 497, D03 497, L33 497, O28 497, G29 497, and B30 497, each with up to two natural gas wells and associated access roads and pipelines – result in a finding of no significant impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the Proposed Actions.

WestWater Engineering, an environmental consulting firm, with the guidance, participation, and independent evaluation of the Bureau of Land Management (BLM), prepared this document. The BLM, in accordance with 40 CFR 1506.5 (a) and (c), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

DECISION/RATIONALE: It is my decision to approve Applications for Permit to Drill wells 8608D P09 497 and 8616B P09 497, with their associated access road and pipeline; construction on public land of a 7.1 mile trunk pipeline, COC70171, from the TransColorado Pipeline to the Bull Fork compressor; and the potential development of two wells each at locations L34 397, P04 497, D03 497, L33 497, O28 497, G29 497, and B30 497, with the mitigation listed below. The Proposed Actions are in concert with the objectives of the White River ROD/RMP in that they would allow development of federal oil and gas resources in a manner that provides reasonable protection for other resource values. Protection for other resource values will be assured by implementation of the mitigation measures described below and attached to the APDs as Conditions of Approval and to the right-of-way grants as stipulations.

MITIGATION MEASURES:

1. Dust abatement measures will be implemented as described in the APD's 13 Point Surface Use Plan.
2. The operator will be responsible for complying with all local, state, and federal air quality regulations as well as providing documentation to the BLM that they have done so.
3. To minimize production of fugitive particulate matter (fugitive dust), vehicle speeds must not exceed 15 mph *or* dust plume must not be visible at appropriate designated speeds for road design. In addition, the application of a BLM approved dust suppressant (e.g. water or

chemical stabilization methods) will be required during dry periods when dust plumes are visible at speeds less than or equal to 15 mph. Surfacing the roadway with gravels will also help mitigate production of fugitive particulate matter.

4. To reduce production of fugitive particulate matter originating from well pads and associated stockpiled soils (long term storage) interim reclamation will be required. Interim reclamation will consist of excess stockpiled soils associated with pad construction being pulled back over the portion of the well pad not being utilized for production facilities and access. Portions of the well pad undergoing interim reclamation will be returned to grade (as close as possible), promptly re-seeded, and biodegradable fabrics will be utilized on slopes exceeding 5% (e.g. fill slopes). If interim reclamation is not practical (e.g. completion of drilling operation will require an extended period time (multiple well pads)), stockpiled topsoils will be covered with biodegradable fabrics such as (but not limited to) jute netting and seeded with a BLM approved seed mixture (see vegetation section of this document). Furthermore, soils stockpiled for short durations (e.g. during road/pipeline construction and maintenance) will be wetted during dry periods to reduce production of fugitive particulate matter.
5. The operator is responsible for informing all persons associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and contact the authorized officer (AO). Within five working days, the AO will inform the operator as to:
 - whether the materials appear eligible for the National Register of Historic Places,
 - the mitigation measures the operator will likely have to undertake before the site can be used (assuming *in situ* preservation is not necessary), and
 - a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.If the operator wishes at any time to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will be allowed to resume construction.
6. Pursuant to 43 CFR 10.4(g), the holder of this authorization must notify the AO by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), the holder must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.
7. Any noxious or invasive plants will be eliminated before any seed production could occur. Eradication should make use of materials and methods approved in advance by the Authorized Officer.

8. The operator will clean all earth-moving equipment and transports and any off-road equipment to remove seed and soil prior to commencing operations on public lands within the project area. In addition, all earth-moving equipment used in construction of well pad G29 497, as well as transport equipment, will be cleaned prior to leaving the immediate area of the well pad.
9. The operator will be required to monitor disturbed areas for establishment of any noxious weed species. Monitoring should continue until successful reclamation efforts have been achieved.
10. The operator will be required to attain sufficient vegetative cover from reclamation species within three growing seasons, comparable to that of nearby undisturbed plant communities.
11. The operator shall prevent use by migratory birds of reserve pits that store or are expected to store fluids which may pose a risk to such birds (e.g., migratory waterfowl, shorebirds, wading birds and raptors) during completion and after completion activities have ceased. Methods may include netting, the use of bird-balls, or other alternative methods that effectively prevent bird use and that meet BLM approval. It will be the responsibility of the operator to notify the BLM of the method that will be used to prevent bird use two weeks prior to beginning completion activities. The BLM-approved method will be applied within 24 hours after completion activities have begun. All lethal and non-lethal events that involve migratory birds will be reported to the Petroleum Engineering Technician immediately.
12. Revegetation of the four well sites and pipelines located in the upper portions of the Willow Creek drainage should encourage mountain sagebrush where it currently occurs and grass/forbs at well site L33 497. A very small amount of mountain sagebrush seed ($\frac{1}{4}$ lb./acre) is recommended in place of fourwing saltbush in the reclamation seed mix. Mountain sagebrush seed should be collected in the vicinity and applied separately by broadcasting in the fall or on snow during the winter.
13. Sage grouse use of mountain sagebrush valley bottoms should be further evaluated, particularly where summer water is available, open grass/forb habitat is present, and open sagebrush corridors are available (even if steep) into the drainage bottoms from the adjacent ridge tops.
14. Goshawk will be included in the raptor nest surveys that are to be completed prior to any development activity during the raptor-nesting season (April 1 to August 15).
15. The operator will be required to collect and properly dispose of any solid wastes generated by the Proposed Action.
16. The operator will be responsible for complying with all local, state, and federal water quality regulations (such as but not limited to Phase I Storm Water Permit, Section 404 permits, and Industrial Wastewater/Produced Water Permits). The operator will also be required to provide the BLM with documentation that all required permits were obtained.

17. The White River Record of Decision and Approved Resource Management Plan (July, 1997) includes a list of standard Conditions of Approval to be applied to All Surface Disturbing Activities (COAs 1-12) and to Road Construction and Maintenance (COAs 13-62). The applicant is required to be familiar with those standard COAs and to implement them as on-site conditions warrant. No operations using chemical processes or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies as outlined in Appendix B of the White River Resource Area RMP/ROD.
18. All surface disturbing activities will strictly adhere to “Gold Book,” fourth edition, surface operating standards for oil and gas exploration and development. Copies of the Gold Book can be obtained at the WRFO.
19. The proposed crossing of the unnamed tributary of East Willow Creek at the road realignment west of well pad P09 497 will be designed and constructed in accordance with BLM Manual 9112. The design, review, and evaluation will be accomplished under the direct supervision of a registered professional engineer. The crossing will be designed to minimize impacts on water quality and provide streambed stabilization downstream of the crossing. Due to the proximity of the junction with East Willow Creek downstream of the crossing, the road crossing design will provide for soil stability of East Willow Creek at the junction. The culvert will be installed with a skew so that outflow meets East Willow Creek at an angle of approximately 45 degrees, rather than the current right angle stream junction. The road reroute will be done in accordance with the Section 404 permit issued by the Corps of Engineers for the proposed P09 497 well pad and associated road crossing (culvert) of an un-named tributary of East Willow Creek.
20. The road crossing of West Willow Creek to access the B30 497 well pad will be designed and constructed in accordance with BLM Manual 9112. The design, review, and evaluation will be accomplished under the direct supervision of a registered professional engineer. The crossing will be designed to ensure fish passage, minimize impacts on water quality, and provide streambed stabilization downstream of the crossing. An Army Corps Nationwide permit will likely be required for the B09 access road crossing of West Willow Creek. The need for pad alteration and additional permitting would be determined when an APD is submitted for this location.
21. The road along East Willow Creek between its junction with West Willow Creek and its junction with the Bull Fork of Willow Creek will require frequent drainage relief after construction of the trunk pipeline. Where sufficient room is not available for sediment ponds or sediment sumps, additional drainage relief in the form of water bars or culverts will move drain water into East Willow Creek. To avoid further erosion and sediment deposition into the creek, appropriate erosion controls on the outlet side, e.g. jute mats or armoring with rock, will be installed.
22. Interim reclamation will be required as addressed in the Air and Water Quality sections of this EA. Complete reclamation will follow abandonment of the well pads. Access roads and well pads will be recontoured and 100% of disturbed surfaces will be vegetated with the suggested seed mixture outlined in the Vegetation section of this EA.

23. To mitigate contamination of soils and local groundwater, environmental unfriendly substances (e.g. diesel) must not be allowed to contact soils. The use of impermeable matting under equipment (tanks, pumps, or other equipment used in handling hazardous liquids) is suggested to intercept and contain potential releases.
24. Segregation of topsoil material and replacement of topsoil in its respective original position (last out, first in) would assist in the reestablishment of soil health and productivity. Topsoil stockpiles should be seeded and covered with geotextile fabrics to minimize erosion and maintain viability of the topsoil resource.
25. In those areas where the side slope adjacent to the road is greater than 20 percent, the construction width of the pipeline right-of-way will be limited to 30 feet. In those areas, the applicant will be permitted to use the roadway as a temporary work area. Surface disturbance on slopes greater than 35% (fragile soils and landslide areas) will not be permitted without a BLM-approved engineered construction/reclamation plan.
26. **Reclamation.** All disturbed areas for the trunk pipeline from main Willow Creek to the Bull Fork compressor and well pad locations P04 497, D03 497, P09 497, and L34 397 will be reclaimed with the following seed mix:

Native Seed Mix #5

Species	Pure Live Seed*
Basin Wildrye (Magnar)	2 lbs/acre
Western wheatgrass (Rosanna)	3 lbs/acre
Bluebunch wheatgrass (Secar)	1 lb/acre
Thickspike wheatgrass (Critana)	2 lbs/acre
Fourwing saltbush (Wytana)	1 lb/acre

* Seeding rate for drill seeding. Double rate for broadcast/harrow seeding

All disturbed areas for well pad locations L33 497, O28 497, G29 497, and B30, as well as their associated pipelines will be reclaimed with the following seed mix:

Native Seed Mix #6

Species	Pure Live Seed*
Basin Wildrye (Magnar)	2 lbs/acre
Western wheatgrass (Rosanna)	2 lbs/acre
Slender wheatgrass (Primar)	2 lbs/acre
Mountain brome (Bromar)	2 lbs/acre
Big bluegrass (Sherman)	1 lb/acre
Fourwing saltbush (Wytana)**	1 lb/acre
Rocky Mountain penstemon	1 lb/acre

* Seeding rate for drill seeding. Double rate for broadcast/harrow seeding

** Per requirements specified in the Threatened, Endangered and Special Status Species Section, ¼ lb of locally- gathered mountain sagebrush seed will be substituted at well site L33 497 (DW-P054),

All pipeline routes will be reclaimed within the first growing season or prior to the first full growing season following disturbance.

Successful revegetation should be achieved within three years. The operator will be required to monitor the project site(s) for a minimum of three years post-construction to detect the presence of noxious/invasive species. Any such species that occur will be eradicated using materials and methods approved in advance by the AO.

Areas of the nine well pads not used during any production phase, including cut-and-fill slopes, will be contoured to a slope of about 5:1, and will have topsoil redistributed and revegetated with the appropriate seed mix noted above prior to the first full growing season following completion of drilling. Final reclamation of roads and well pads following abandonment will be achieved with the appropriate seed mix noted above.

27. No pipeline construction should occur between April 1 and August 15 or until areas within ¼ mile have been surveyed for nesting raptors (T.3 S R.97W Sec. 22 SESE; Sec. 23 W½W½; Sec. 27 W½E½, NENE; Sec.34 NWNE, E½NW, NESW; T.4S R.97/W Sec. 3 NWNW).
28. No well pad construction or drilling should occur between April 1 and August 15 or until aspen groves adjacent to well sites have been surveyed for nesting raptors (L33 497, T.4S R.98 W sec.33 SWSW; O28 497, T.4S R.98 W sec. 29 SWSE; G29 497, T.4S R98 W sec.29 NWSE; B30 497, T.4S R.98 W sec.30 NENW).
29. Road construction and maintenance standards and procedures will be implemented as described in the APD's 13 Point Surface Use Plan.
30. Because of the confining nature of the terrain in the drainage where the P09 497 well pad is to be located, the pad will be constructed so as to allow traffic across it and easy exit onto the two-track road that continues east up the drainage.
31. Fire avoidance and prevention measures will be implemented as described in the APD's 13 Point Surface Use Plan.
32. Vegetative material brought back onto the pipeline should not exceed 2-5 tons/acre in any given location. Excess material should be distributed along sections of the pipeline that traverse through sagebrush habitats or less dense PJ sites or chipped and scattered along the corridor.
33. All exposed rock outcrops in the project area will be examined by an approved paleontologist with a report detailing the results of the inventory; any mitigation recommendation will be submitted to the BLM prior to the initiation of construction on any of the well pads, compressor site, or road/pipeline right-of-way. A monitor will be present at any time that it becomes necessary to excavate into the underlying bedrock formation in order to bury pipelines, level well pads, or excavate reserve/blooi pits, or to construct any project features.
34. Should fossil resources be discovered at any time during construction, all construction activity in the vicinity of the discovery will cease until the BLM and an approved paleontologist have evaluated the discovery and recovered the remains. Work will not resume in the area of the find without written approval of the AO.

35. The pasture fence at location B30 497 will require relocation to the east. The fence will be constructed to BLM specifications for a four-wire, barbed fence on big game ranges. Relocation of the fence will provide a minimum six-foot-wide path on the outside of the fence around the location and access road to be used for livestock access to the watergap on West Willow Creek.
36. The Conditions of Approval for each well will be made a part of the right-of-way grant stipulations plus any standard stipulations from the BLM right-of-way manual that apply. The extra work width of 30 feet will be reclaimed and recontoured immediately after construction has been completed and weather permits.
37. A "Notice to Proceed" stipulation will be included in the right-of-way grant for the pipelines, indicating that construction of the pipelines will only be permitted to begin when the wells are producing.
38. All permanent (on-site for six months or longer) structures, facilities, and equipment placed onsite will be low profile and painted Munsell Soil Color Chart Juniper Green or equivalent within six months of installation.
39. Interim reclamation measures described in the Vegetation section will be implemented to reduce the color contrast.

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NAME OF ENVIRONMENTAL COORDINATOR:

SIGNATURE OF AUTHORIZED OFFICIAL:



Field Manager

DATE SIGNED: 6/30/06

ATTACHMENTS: Figure 1-Location Map of the Proposed Action
Figure 2-Map of the Willow Creek Project Area – Northern Section
Figure 3-Map of the Willow Creek Project Area – Southern Section





